

FEB 11 1921

VOL. XXXI

JANUARY, 1921

No. 1

THE LARYNGOSCOPE

AN INTERNATIONAL MONTHLY JOURNAL
DEVOTED TO DISEASES OF THE

EAR - NOSE - THROAT

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Subscription, \$6.00 per Annum, in Advance.

Foreign Subscription, 35 Shillings per Annum, Post Free.

Single Copies, 75 cents.

PUBLISHED BY THE LARYNGOSCOPE CO.

3858 Westminster Place,

St. Louis, Mo., U. S. A.

FOREIGN OFFICE, BAILLIERE, TINDALL & COX,

6 HENRIETTA ST., STRAND, LONDON, ENG.

[Entered at the Postoffice at St. Louis, Mo., as Second-Class Matter, in July, 1896.]

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ST. LOUIS, JANUARY, 1921.

No. 1

ORIGINAL COMMUNICATIONS.

(Original Communications are received with the understanding
that they are contributed exclusively to THE LARYNGOSCOPE.)

THE TECHNIQUE OF A RADICAL FRONTAL SINUS OPERATION WHICH HAS GIVEN ME THE BEST RESULTS.*

DR. R. C. LYNCH, New Orleans, La.

One treads with fear and trembling when thinking of the cure of a condition so distressing and fraught with so much misgiving as a chronic frontal sinusitis or even more in the chronic pan-sinusitis, either unilateral or bilateral. I have had many heartaches over the results which were so far removed from my ideal of what a cure should be until finally I worked out the technique which has given me an ideal result in fifteen consecutive cases.

It is unnecessary for me to go over other methods of external frontal sinus surgery, for all of you are more than familiar with their every detail, and Coakley, Beck, Mackenty, Skillern and Lathrop in our midst seem to symbolize an attack through the anterior wall, osteoplastic flap, orbital wall, combined anterior and orbital wall, and the intra-nasal drilling view through an external window. The indications are as clearly defined, and when all else fails, then the external operation is in order, and in acute fulmination states, it is the method of choice.

I have tried each and every principle with the results far from my ideal of what they should be, until picking here and there, I developed the technique which has given me 100 per cent cures in a

*Read before the 26th Annual Meeting of the American Laryngological, Rhinological and Otological Society at Boston, June 2, 1920.

series of fifteen cases over a period of two and a half years' duration—a post-operative time sufficiently long to feel that the results are permanent.

The principle of the attack is fashioned after Knapp's operation; the detail of the technique seems to be that which is ultimately responsible for the proper healing and final cure of the condition. The nasal cavity is prepared as for the nasal plastic surgery of the present time—alkaline douches with thorough swabbing of 3 per cent iodine in alcohol which will not destroy surface epithelium but has sufficient penetrating power to be of marked antiseptic value; oral hygiene is likewise necessary and teeth, gums and recesses are covered with the same solution. A post-nasal plug on the operated side is carefully placed and the threads are left long enough to facilitate its removal at the completion of the operation.

The skin surface is washed with alcohol and then ether in preference to benzine and standard tincture of iodine applied broad and far of the field extending to the eyelash line on both sides. The eyebrow is carefully considered in this preparation, but is unshaven, and it is apparent that the best cosmetic results are through the unshaven eyebrow. The eye is carefully washed with a bland solution and the lids are sealed with sterile adhesive and a cushion of gauze laid over for protection.

Cross cuts are made along the line of incision for proper approximation of skin and deeper tissues. The incision is as for the Kilian or Knapp procedure, but does not at first extend outwardly beyond the supra-orbital notch until it is found by intra-sinus measurement that this is necessary. We proceed gradually through the periosteum and when this is accomplished all vessels are tied off with the smallest of catgut to avoid the possibility of the forceps injuring the eye.

The periosteum is elevated only from the lower half of the incision. If the periosteum is elevated over the frontal plate of the frontal bone or represented by the upper half of the incision, it is not likely to reapply itself to the bone again and in consequence there will develop either immediately or within three months a periostitis with elevation and a sequestrum of more or less size will be cast off; this has happened on four or five occasions in my early sinus operations, and I have been able to overcome this disturbance by adhering to this point carefully. It will also protect the patient from the risk of an osteomyelitis gaining its start through this area, especially when the periosteum does not reapply itself quickly, as

may happen either from too early blowing the nose or from post-operative edema that follows in some of these cases.

In elevating the periosteum from the lower half of the incision, great care must be taken not to button-hole the orbital periosteum as this may be followed by disturbance of the orbital balance, but the remotest area of orbit sinus wall must come into view. In elevating the periosteum over the nasal process of the superior maxilla lower lateral edge of the nasal bone in the region of the upper portion of the lachrymal sack, which is carefully dislocated, and in the area of the superior oblique, which is also dislocated, a sharp gouge is found to be the best instrument to use. A long submucous elevator exposes best the lachrymal and lamina paparacia of the ethmoid. This then represents the area of bone removal which is done with chisel and mallet and various rongeur forceps. It must be remembered that the angle formed by the orbito sinus wall or floor of the frontal sinus with its posterior or brain wall, must be completely obliterated, and especially is this true at the external angle, for this is the area that most often harbors the infected mucous membrane which causes failure. When the common sinus orbit wall has been carefully removed the mucous membrane of the frontal sinus is carefully curetted away and again any remaining mucous membrane degenerated or not will conduce to failure. With the Coakley curets I have not met so far the sinus which will not permit of a most thorough curettage of the entire cavity. This done, a strip of gauze soaked in iodine is packed firmly into the cavity to prevent or guard against any infection entering this area from below and it will control bleeding very nicely.

Two catgut sutures are now placed about half way into the cavity through the orbital periosteum; the ends are left long for traction sutures. We have found this the best method of retracting the lower edge of the wound to give us a view of the deeper parts and the sutures can result in no injury to the eye such as may be done by a parker or rat-tooth model. With the removal of the nasal process of the superior maxilla, the lower lateral edge of the nasal bone, the lachrymal and the entire lamina paparacia of the ethmoid there results a complete evisceration of the entire ethmoidal labyrinth, since the middle turbinate has been previously removed and particular search is made for those orbital and sinus extensions of the ethmoid.

The roof, cells of the ethmoid next receive our attention and these can be so comfortably cleaned out by direct vision without the least fear of injury to the cribriform area, though sometimes

I lay a stout probe along the roof of the nose through the nostril to act as a safety guide, the end of this probe resting in the sphenoid sinus to act again as a guide when its anterior wall is reached. The post-ethmoid sphenoid cells stand plainly in view, are broken down and every vestige of the mucous membrane is removed in this quarter. Finally the anterior wall of the sphenoid is removed completely, and in seven of the fifteen cases I have curetted the mucous membrane from the sphenoid through this opening. If the nose is cleaned and dried one can get the two angles of view for proper and comfortable orientation. The raw bone surfaces are carefully sponged with tincture of iodine and this is done as one of the first steps on the frontal plate of the frontal bone. It is not necessary to disturb the nasal spine of the frontal or to open this cancellous area to the wound because it is a fertile source for subsequent infection and will produce granulation tissue in abundance sufficient to interfere with drainage.

A large drainage tube three-eighths of an inch in diameter, with one end cut on a long bevel, is passed through the vestibule of the nose and lays in what was the area of the beginning infundibulum of the sinuses. The iodine gauze is removed from the upper portion of the sinus wall and the entire cavity is swabbed with iodine. If there has been bleeding from the post-ethmoid sphenoid region a strip of iodoform gauze dipped in tincture of Benjoin compound is packed loosely to control this area. The frontal area does not bleed. Interrupted catgut sutures or chromic are placed to bring the subcutaneous tissues together, but the needle point is not permitted to pass beneath the periosteum of the upper half of the incision, though the suture takes in the margin of the incision and they are placed with due regard to the cross cuts of the external incision.

The wound edges and neighboring field is carefully cleaned of all blood, using ether for this purpose, and the skin is brought together with metal clips, using only enough tension to secure accurate approximation. No external drainage is necessary. The eye is now uncovered, carefully washed out again and a 20 per cent solution of fresh argirolis instilled. About one ounce of sterile vaseline is placed over the eye, the quantity acting as a pad and insuring thorough protection to the eye and lids. A hollow fluff of gauze is placed over the eye, a small pad separate over the incision and a large fluff over all with a proper bandage. The post-nasal plug is removed at once or as soon as the patient is awake from the anesthetic (Ether).

The gauze strip is removed from the nose in thirty-six hours and a sterile probe is passed through the rubber tube daily to insure its patulency. The rubber tube is left in place for five days, as a rule, when it is removed. The external bandage is removed in thirty-six hours, when the eye is left uncovered and the clips come out usually on the fifth or sixth day.

After the removal of the rubber tube, a large dilator or sound is passed into the sinus and this is kept up usually for ten days, when the healing seems to be established and convalescence about complete. No washing of the sinus or nose is permitted, and we feel that the less the wound is interfered with after the operation the more rapid and perfect the healing. The discharge of course stops at once and does not recur. The healing is complete with a perfectly cicatrized nose as the result, with no scab formation and no discomfort.

In four of my cases the sinus extended to the hair line; yet, no window was cut in the anterior wall and they healed beautifully. In two cases there was a necrosis of the posterior wall with an exposure of the dura; in one there was a large epidural abscess producing marked exophthalmus, reported before the Southern Medical Association, and in every one of the fifteen cases there has been perfect healing, no discharge, no scabbing, and a perfect cosmetic result. I demonstrated the operation at the meeting of the American Medical Association in New Orleans, and this patient was discharged from the hospital two weeks ago. The results have been so ideal in all of the cases that this is the reason for going into its detail and to believe it is the best and safest procedure for this class of cases.

EDUCATION OF THE VESTIBULAR SENSE.*

WM. GUY RUGGLES, New York.

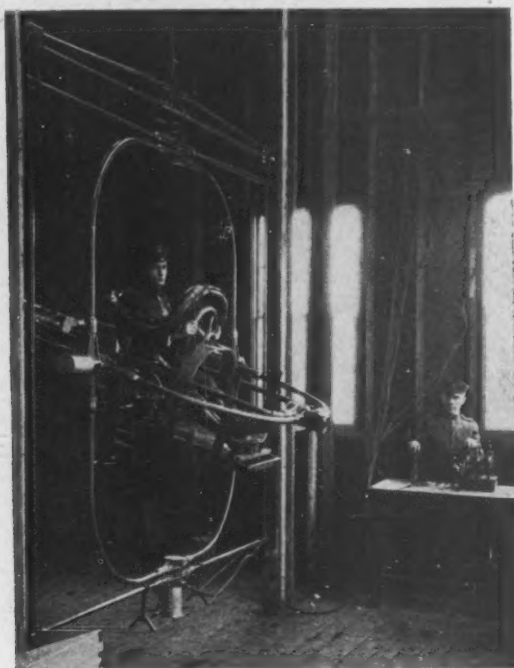
The studies of years have convinced me that the vestibular sense could be developed to an extraordinary degree. My investigations on the effect of unaccustomed positions upon muscular co-ordination have been carried on for many years. I have since applied these facts to the study of aviation. Information gathered from medical libraries convinced me that the vestibular sense is of vital import to man, and that the labyrinth is of greater importance to man while flying than during normal activities on the earth. The brain, voluntary and involuntary, a prisoner in a dark bony castle, is automotive only by directing to its will a most amazingly intricate organism, the body—limp as a rope or rigid as a tree. To have knowledge of spacial relationship, where starting from, and how to reach a destination, the brain must secure information from outside the brain itself. The mechanism by which the brain gathers this information, compares, values, decides, and starts muscular action, and then reconsiders and redirects when results are not as expected, is wonderful beyond the expressive power of language. Information from all sources, arriving over different nerve pathways, is assimilated by the voluntary or involuntary brain, and the resulting deductions are the basis of muscular activities. If information were delayed or insufficient, intelligent action would be impossible. Very urgent impulses might arrive too late to be of value.

The major axis of the astronomical telescope is rotatively mounted parallel to the axis of the earth, and may be geared to a suitable driving mechanism which, as the earth rotated from West to East, would turn the telescope from East to West with an even rate of rotation. The semi-circular canals of the labyrinth do that for the eye, not in one plane, however, but in *three* planes of direction. The comparison is of interest here, for, if the driving mechanism of the telescope were to vary, the astronomer would have to decide whether the star had moved, the earth varied in rotation, or the telescope gone wrong. Just so, when the semi-circular canals are excessively stimulated the vision pictures become disorientated from the true line of gravitation, and the other faculties must assist in establishing the point of error. A space of time is required to determine this,

*Reported remarks taken at the 53rd Annual Meeting of the American Otological Society, Boston, May 31, 1920.

earth, the relative position of which is retained by memory and a during which time the muscle and tactile senses hold fast to the semblance of equilibrium is maintained. When considering and attempting to comprehend the physiological problems of flying, this is one of the facts standing out prominently. The aeroplane is an unstable base.

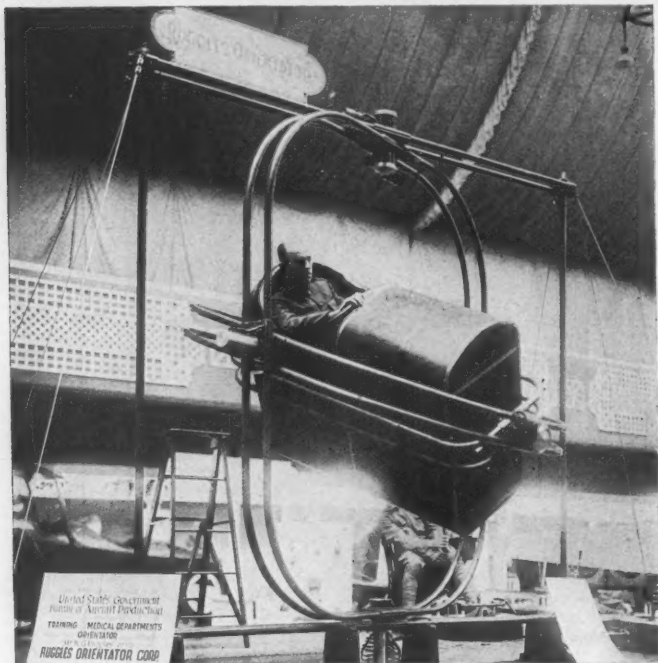
In flight the airplane is capable of complete rotation in any direction. Man, not being accustomed to such movements, when sub-



The First Ruggles Orientator. Installed in Massachusetts Institute of Technology by U. S. Navy. Used by the U. S. Naval Aviation Detachment in 1918. Ensigns Smith and Upton operating the machine.

jected to maneuvers of that nature, loses his ability to co-ordinate muscle action, until education has progressed for a space. When unaccustomed rotations and positions are in rapid succession, the muscular action might, owing to the inability of the brain to assimilate such a flood of information, be entirely lacking, or of a violent or unintelligent nature. The muscles might become rigid.

While piloting an airplane the brain should be capable of correctly estimating spacial relationship from the unstable support and to immediately and correctly co-ordinate muscular action. This nerve, mental, and physical power, taken together, might be considered as a faculty. During flight this faculty is of greater importance than any other ability and upon this "Fundamental Flying Faculty" the aviator has to depend to direct and land his craft.



Ruggles Orientator.

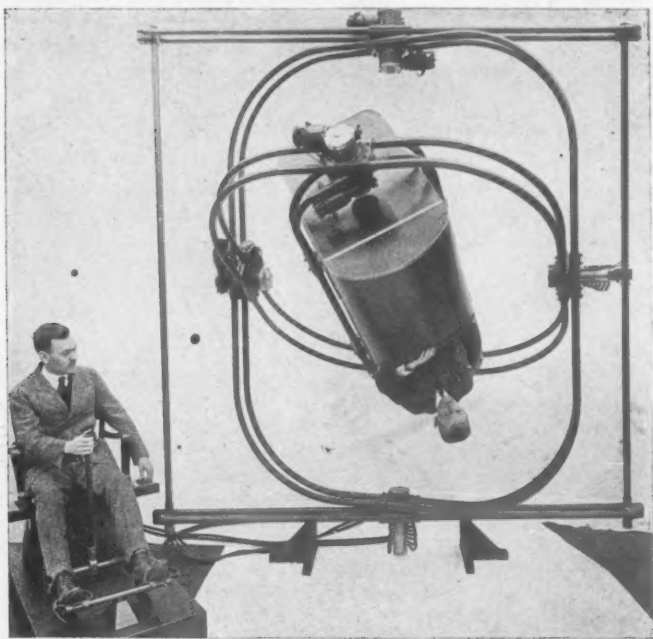
Knowledge of mechanics, language or politics at that time avails him nothing. Either he flies his craft, or he does not!

The desire to minimize the time, expense and hazard, necessary to develop this faculty by careful and extensive flying, led to the invention of an apparatus to develop the faculty.

This apparatus was never intended to "teach one to fly on the ground" as has been incorrectly stated, and it did not do that, but its careful and proper use would develop the vestibular sense to an extraordinary degree with muscular co-ordination in all possible

positions. Properly applied its use would develop the ability to counteract false rotational sensations and appreciate the apparent uncertainty of vision picture before stimulation subsided. The use of the apparatus during and since the war has proven that the education of this faculty by such means was entirely practical.

To derive the largest measure of benefit from this work the machine should be outside, where the student might accustom the brain to vision pictures of the horizon at all angles, and part of the



Orientator. Standard U. S. Air Service. Wm. Guy Ruggles, the inventor, in the machine inverted.

work should be done blindfolded. Under such conditions and careful instruction, the involuntary aversion to flying could be quickly eliminated.

Aviators in whom the labyrinthine sense and the associated powers which go to make up the Fundamental Flying Faculty are developed, would experience the confidence of performance in the sky of the trained skater on ice. Serene in this confidence the other

senses, less occupied in flying, awaken to ecstasy as they attune themselves to the splendors of the situation. The mighty pipe organ notes of the droning motor, with its aeolian accompaniment of singing wires; the glories of scenic effects; the rushing flow of rejuvenating ozone—business cares become trivial. With an abandon known only to eagles and gods they course the sky deeps of the air-ocean at exhilarating velocities, and, with magnificent distances on every side, figuratively swing the earth through three dimensions.

Once the physiological problems involved in flying are thoroughly understood by the masses, and the ease and comfort in which they might be scientifically developed and educated are made known, hundreds of thousands will avail themselves of this incomparable means of pleasure and transport.

The physical problems of aviators are essentially the responsibility of otologists. Aviation will force a new, interesting and very useful duty upon the otologist who should immediately prepare to care for the requirements in this rapidly expanding art. Concerted effort will best serve the great, world-wide Flying Fraternity of the Future.

DISCUSSION.

Dr. J. G. WILSON, of Chicago, said it was not uncommon to speak of the labyrinth as the 6th sense ("vestibular sense"). One need not object to this broadening of the term if one recognized that when using it, it had not the same definite restrictions that the term had when given to the eye as the organ of sight, or the cochlea as the organ of hearing. In sight and in hearing there was a distinct sensation that was blotted out by the destruction of the organ. No such conscious sensation and no such deprivation followed in the case of the otic labyrinth. It was a misnomer to speak of the vestibular sense as the balancing sense or mechanism: it was but one of the afferent endings of the balancing mechanism. Unless one grasped this significance, one lost sight of the various factors essential to equilibrium and of the co-ordinating mechanism which was the part where *education*, if one could speak of it as such, took place. Again, what was meant by the "vestibular system?" If it began in the otic labyrinth, physiology had not told where it ended nor what constituted it.

Dr. MAX A. GOLDSTEIN, St. Louis, said he agreed with Dr. Wilson that the nomenclature was loose. The vestibular sense was a peculiar missing link, and the vestibule was supplied with sensory innervation. The cochlear and vestibular nerves were not the same histological product as the auditory nerve, and contained a complicated selective apparatus. All special nerves were modified touch-sense nerves and this nerve had a motor co-ordination sense. It was a missing link between the sensory machine on the one hand and motor co-ordination on the other. It thus took a unique place physiologically. Deaf mutes could be educated to develop a normal vestibular sense.

Dr. B. A. RANDALL said he questioned if they could swim in the dark.

Dr. GOLDSTEIN said they could swim with their eyes closed and under water, which came to the same thing.

Dr. B. A. RANDALL said he questioned if they could swim in the dark. They would be likely to drown, as they would not know if they were coming up or going down. The value of education of the vestibular sense still needed careful investigation.

Dr. ISAAC H. JONES, Los Angeles, said that the vestibular mechanism was the center that received impulses.

Dr. EMIL AMBERG, of Detroit, asked Dr. Jones if it was possible to educate an end organ.

Dr. JONES said no; education was a cerebral function.

Dr. MAX GOLDSTEIN said he had been working on the dead labyrinth. What form of education of the static sense do we develop in the congenitally deaf child? Is such improvement in the end organ or central organ?

Dr. JONES said he had done something to improve reception of impressions in the peripheral organ.

Dr. EMIL AMBERG said that education was not in the end organ but in the interpretation of impressions by the brain. He cited the example that one hears one's own name best when called in a crowd, because of preformed and well-established pathways in the brain.

Dr. GEORGE E. SHAMBAUGH, of Chicago, said his conception of the vestibular mechanism was one having two distinct functions; one of sensing motion, and the other of assisting in maintaining bodily equilibrium. The latter could be accomplished without sensing of motion. Equilibrium was preserved normally by means of a constant stream of tonus impulses emanating from the labyrinth. It was probable that this stream emanated from the hair-cells in the cristae of the semicircular canals, the impulses being dependent upon constant stimulation of the hair cells as a result of movements in the endolymph. These movements arose from pulsations similar to intra-cranial pulsations, synchronous with the heart beat. The several openings of the labyrinth permitted of a to and fro motion of the endolymph. If the body were suddenly deprived of tonus impulses coming from the one ear, then a tremendous upset in equilibrium took place with intense vertigo. When this took place simultaneously in both ears there was no vertigo. The labyrinth was not the only source for tonus impulses to the skeletal muscles. All impulses from the periphery to the brain were the source of extra labyrinthine tonus. Where both labyrinths were destroyed these extra-labyrinthine impulses were so developed as to take the place in a large measure of labyrinthine tonus. But a person who had sustained loss of both labyrinths never had entirely normal equilibrium.

THREE CASES OF MASTOIDITIS WITH SEVERE COMPLICATIONS AND RECOVERY.

DR. ALICE H. COOK, Philadelphia.

As new methods of treatment are discovered and tried out it is of value to add to the literature any cases that show definite results regarding their use. The following three cases of mastoiditis are of interest for this reason and also because all three recovered in spite of extremely severe complications.

Serum treatment of many varieties has interested all members of the profession who are experimentally inclined, and to many the results obtained have been disappointing. However, we are not justified in abandoning them so long as we continue to get beneficial results in a percentage of cases. The work of the Rockefeller Research Institute¹ on the use of anti-pneumococcic serum in pneumonia has been most stimulating. But this report makes practically no claims concerning the use of serum in complications such as mastoiditis. The presence of pneumococci in the blood is regarded as a sign of severe infection and of bad prognostic value. Case 1 had pneumococci in the blood and in the mastoid pus and developed pneumonia. The pneumonia was benefitted by treatment with polyvalent pneumococcic serum. Case 2 with pneumococci and streptococci in the blood, had pneumonia which was benefitted by the same treatment, but a double mastoiditis was not prevented and a multiple neuritis was unaffected and he suffered from a tremendously severe serum sickness. Case 3 showed no results from the use of anti-streptococcic serum.

Another method of attack upon infecting organisms is the use of chemical agents rather than biologic. Dr. Samuel R. Haythorn² has made some interesting progress along this line. He reports a series of cases which show arsphenamin to be of distinct value in combating bacteria free in the blood, especially streptococci cases, if the treatment is used early, together with the surgical eradication of any known focus of infection. Case 2 shows quite spectacular results from this treatment. And I may add that on the strength of this example other septicemia cases in the Woman's College Hospital have been treated with arsenobenzol and have shown equally satisfactory results.

The cases reported were admitted to the Woman's Hospital in Philadelphia, one to the oto-laryngological service of Dr. Margaret Butler, and two to the pediatric service of Dr. Eleanor C. Jones, who referred them to Dr. Butler's service for consultation and operation. Thanks are due Dr. Butler and Dr. Jones for permission to report the cases. I am indebted also to Dr. Berta Meine, the Director of Laboratories, for her interest and suggestions.

Case 1. Howard B., aged 1 year, was admitted to the hospital January 13, 1920, with the following history: Although a delicate, premature infant, weighing $4\frac{1}{2}$ pounds at birth, he showed at 1 year ordinary development and had never been sick except for colds and slight stomach upsets. Early in January he began to vomit frequently, had scalding urine, irritating stools, and was very fretful. January 10 he was brought to the out-patient department with a fever of 101.2° . He was erupting teeth. Next day his temperature was higher.

On admission the physical examination showed posterior cervical glands somewhat enlarged, tongue slightly coated, heart sounds rapid. Both drum heads normal. Child a mouth breather, dry secretion in left nasal fossa, right fossa free, very large faucial tonsils, soft palate did not retract, probably a good-sized adenoid present. Urinalysis was negative. Throat culture showed pneumococci and staphylococci. The temperature remained about 102° for five days with daily excursions to 100° . Pulse about 120.

On the fourth day his right ear began to discharge and the drum was found to be extremely red in the upper portion. The pus contained pneumococci. A week later as the drum was bulging and drainage poor an incision was made in the drum head. This operation was repeated January 26.

The child was now very ill, his temperature rising above 105° on January 25 and 26, with excursions to 100° . Though frequently examined for mastoiditis no signs were elicited, no tenderness or swelling of the mastoid, no sagging of the posterior canal wall.

Blood examination showed hemoglobin 55 per cent, w.b.c. 14,000, polyneuclears 52 per cent, small mononuclears 42 per cent, large mononuclears 6 per cent, r.b.c. 4,140,000. Blood culture positive for pneumococci. The lungs continued clear.

As there was nothing else to account for the child's serious state, it was decided to open the mastoid, and on January 27 a simple mastoid operation was performed. On exposing the process two small areas of necrosis were found on its surface. There was pus

throughout the mastoid, and from it pneumococci and streptococci were cultured. On account of the type of the temperature curve a diagnosis of sinus thrombosis had been considered and therefore a small area of the sinus was uncovered. It appeared normal. At the same operation the adenoid was removed and pus escaped from the naso-pharynx. The operation lasted thirty minutes.

Next day his temperature was still 105° and his condition very serious. Examination of eye grounds gave no indication of intracranial pressure or meningitis. The child was limp, heart action very rapid and feeble. No Babinsky, no Kernig, knee jerks overactive, slight quadriceps reflex on left side, marked on right. He was thought to have slight meningismus.

Anti-pneumococcic serum, polyvalent, 50 c.c., was given intramuscularly.

The second day after operation there were signs of lung involvement. His pulse was almost uncountable. The temperature fell from 104° to 100° . Respirations varied from 40 to 70.

The dose of serum was repeated on February 1 and on February 3. The temperature gradually came down from 104° on February 1 to 99° on February 3, and remained low for six days. By this time his lungs were nearly clear and he seemed much better.

February 10 his temperature began to rise again and his left parotid gland (the opposite side from the mastoiditis) was found to be swollen. It suppurated later, pointed low and was opened. Pneumococci and some streptococci forms were found in smear and culture from the parotid pus.

From this time on his recovery was uneventful and he was discharged February 24.

COMMENT.

In this case of mastoiditis complicated by pneumococci in the blood and by pneumonia, the polyvalent anti-pneumococcic serum was of distinct benefit.

The timely mastoid operation was done in spite of the fact that no typical symptoms of mastoiditis could be found.

Case 2. Henry, A. B., aged 2 years, was admitted to the hospital February 3, 1920, with a history of fever beginning January 31, followed two days later by a convulsion. He cried all that night and coughed a good deal.

On admission his temperature was 101° , pulse 162. Physical examination showed a well-developed, well-nourished child with a shrill, sharp cry. He rolled his head from side to side, while the rest of his body remained limp and motionless. No knee jerks were

obtained and no Babinsky. Breath had a heavy odor. Chest and abdomen were negative. Otological examination showed the right drum head retracted and red in the posterior superior quadrant and along the handle of the malleus. Left drum head retracted anteriorly and very red also along the handle of the malleus and posterior superior quadrant. Tonsils large but not particularly inflamed. Ophthalmological examination was negative. Blood examination showed hemoglobin 65 per cent, r.b.c. 3,140,000, w.b.c. 9,000, polynuclears 70 per cent, small mononuclears 15 per cent, large mononuclears 10 per cent, transitionals 5 per cent. Culture from nose showed streptococci long chains, and pseudo diphtheria. Throat culture the same plus a few pneumococci.

Incision of the right membrana tympani was made February 4, as there was increased redness and bulging. The following day the left was incised with the same indication. A drop of pus appeared with the incision. The right drum was then improved in appearance and showed no discharge.

During the first week his temperature reached 102° or 103° nearly every day, falling as low as 98° on two days. A blood culture taken on February 6 showed short chains of streptococci and three days later streptococci and pneumococci.

His general condition continued serious. Five days after admission he had stopped the sharp cry, his body was still limp and motionless, the hands dropping when raised. The throat and palate showed no paralysis. The lungs began to show areas of impaired resonance and of broncho-vesicular breathing on February 6, followed by rales and harsh breathing.

Polyvalent anti-pneumococcic serum, 50 c.c., was given February 10. His temperature rose from 98° to 102° falling again to 98° on the 12th. A second dose of serum was given on the 13th, the febrile reaction this time being 100.2°. For a week his temperature remained between 98° and 100°. His face was tranquil and expressionless, his body like a bag half full of meal, no reflexes.

A serum erythema appeared February 18, and three days later his temperature rose to 103 and an extensive urticaria developed. General glandular involvement and tenderness of the limbs followed. This serum sickness with high temperature continued a week. The cervical and parotid glands became very large. He was very sick. He coughed more. However, about this time he began to use his hands sluggishly. His chest cleared by February 25. His blood picture was but little changed, w.b.c. 7,000, on February 24, polynuclears 76 per cent. The temperature remained up at 103° to 104°.

Both ears during this time had been discharging freely. X-ray on February 26 showed the mastoid regions on both sides very dense.

A double simple mastoid operation was done February 27, also a lumbar puncture. The right mastoid contained considerable pus. The left contained little pus but the cells were broken down. The laboratory reported the spinal fluid normal. The pus from the mastoid contained pneumococci and some streptococci forms.

Following the operation his temperature remained high without great excursions, 102° to 104° , only on the third day varying from 100° to 105.2° . Fine tremors of the fingers, toes and lips were first noted on March 4. Ophthalmological examination March 5 showed slightly unequal pupils and pale disks, otherwise was negative. March 6 a tremendous edema of the scalp developed. Later there were several pressure sores on the back of his head. He was using his hands freely by March 6, but his legs remained flaccid. There was no stiffness of the neck, no Babinsky, no knee jerks. He never spoke, but occasionally gave a shrill cry. He paid no attention to his surroundings.

Although the excursions of temperature were not great an exploratory operation was done March 7 on the lateral sinus on the right side, as this was the side most extensively involved at the first operation. The patient was thought to be in a dying condition so no anesthetic was used and he apparently did not suffer. About half an inch of the sinus was exposed. The wall was bulging but not diseased. It was incised, no thrombosis found, a culture was taken, and the incision packed. The culture proved sterile. The packing was removed five days later without bleeding.

At the suggestion of Dr. Jones neosalvarsan gms. .15, was given intravenously, March 6, on the principle that it would combat the organisms free in the blood. The temperature rose one degree to 104° then fell to 98° , rising again to 103° and remaining near this level for some days. On the 11th it reached 105° . A blood culture showed pneumococci and staphylococci. The scalp edema extended to the eyelids and forehead.

A second injection of neosalvarsan gms. .15, was given March 12, whereupon his temperature fell to 99° and remained low for eight days, while his general condition improved remarkably. Urinalysis showed some hyaline casts March 14 and 22.

By March 19 the scalp edema was gone, he was moving his left leg, and slight knee jerks were obtained for the first time. Mentally he seemed more alert, recognized his parents and fed himself.

There was a temporary rise of temperature March 21, but a

colon lavage improved it. Later his convalescence was interrupted by a suppurating cervical gland. This was opened and drained April 1. The pus contained pneumococci and streptococci. The temperature reached 101° daily for ten days. Blood culture on March 22 was sterile but on April 15 pneumococci were grown.

The patient was discharged April 23. On discharge he could walk, could talk as much as before the illness, apparently he had good hearing and both his ear drums were well healed.

COMMENT.

The pneumonia was evidently improved by the anti-pneumococcic serum.

The persistent septicemia (pneumococci, streptococci and once staphylococci) was but little affected by the serum, but was remarkably improved by neosalvarsan.

The paralysis of the body continued complete for three weeks, then gradually disappeared, first from the arms and neck, then from the lower extremities and back, with complete recovery in about ten weeks. The diagnosis was multiple neuritis. It is quite probable that there was a mild diphtheritic infection at the beginning of his illness which was responsible for the neuritis and paved the way for the pneumococci and other organisms found later.

The severe serum sickness began eight days after the first dose of serum was given and showed in succession erythema, urticaria, extensive glandular involvement, tenderness of limbs, and extensive edema. This persisted for a month and was accompanied by high fever.

Case 3. Ethel T., aged about 30, colored, was admitted to the hospital March 12, 1920. She had had typhoid at the age of eight. All her life she had been subject to sick headaches, the pain being located over the right eye.

Her present illness began with measles about the middle of February. When the measles cleared she had pain in her right ear, very severe until the ear began to discharge after two days. The discharge stopped in a few days and the pain extended back of the ear. A week later her doctor sent her into the hospital.

On admission her temperature was 101°, pulse 100°, respirations 36. There was marked tenderness over the mastoid and a large hard swelling over the sterno-mastoid muscle which was extremely tender. A diagnosis of Bezold's variety of mastoiditis was made.

A simple mastoid operation was done the day after admission. Pus was found in the tip and most of the process was necrotic. All but the posterior wall was removed. The swelling below the tip

was explored and drained. Culture from the pus showed a few short chains of streptococci and a few pneumococci.

Following the operation she had no relief from pain and two days later her temperature rose to 105.2° and continued high with great excursions for ten days. The pain was intense in the right side of the head and in the right shoulder and neck.

Examination by Dr. Frances Van Gasken showed no heart or lung complication. Albumin and casts were found in the urine. The blood Wassermann was negative. Blood culture showed a scanty growth of short chains of streptococci after forty-eight hours. No typhoid in urine or feces.

Anti-streptococcal serum, 50 c.c., was given subcutaneously and 20 c.c. intravenously on March 21.

March 22 Dr. Van Gasken reported Kernig's sign present in both legs, rigidity of neck, absent knee reflexes, no Babinsky, heart muscle soft and heart enlarged to right of sternum $1\frac{1}{2}$ inches, stomach distended.

Lumbar puncture was made and 25 c.c. of clear fluid removed. Cell count was 7 per c.mm. Culture a scant growth of staphylococci, probably a contamination. Lumbar puncture repeated the next day, March 23, showed the spinal fluid under pressure and with a cell count of 31 per c.mm.

A diagnosis of serous meningitis was made from the severe headache, stiff neck, positive Kernig, high pressure and increased cell count of the spinal fluid. The patient held her shoulder in a peculiar high position and complained of extreme pain in it. Her pulse was poor in quality and her general condition very poor.

March 25, two days after the second lumbar puncture, her temperature came down to 99° and remained low until the 29th, when a third puncture was made. It was then normal with the exception of one day, until her discharge April 22. Her general condition improved with the fall of temperature. She continued to complain of pain, though less severe. On the 11th it was located in the frontal region and was associated with vomiting, evidently the type of sick headache she had been subject to previously. The shoulder "hurt like a toothache" on damp days for some time after her discharge and for a while there was slight tenderness along the border of the trapezius. During convalescence in the hospital several abscesses developed. One on the thigh and one in the axilla were opened and drained. On discharge her hearing was good and her drum well healed.

The patient is to report later for a submucous resection to see if correction of a much deflected septum will cure her headaches.

COMMENT.

The most interesting feature of this case is the serous meningitis which was relieved by repeated lumbar puncture.

The anti-streptococcic serum was of no benefit.

Cases 1 and 3 bring up the question of the classification of mild meningeal disturbances. According to Dr. Charles Harrison Frazier³, every acute case of meningitis shows three stages, (1) meningismus, (2) serous meningitis, (3) purulent meningitis.

Meningismus is an incipient meningeal irritation caused by a circulating toxin or irritant. It is seen often in the course of infectious fevers and usually goes on to spontaneous recovery. The spinal fluid may show increased pressure but no cytological change, hypersecretion only.

Serous meningitis or acute meningeal congestion is a more serious state. The spinal fluid always remains clear and sterile. The pressure is increased. The cell count may be normal, borderline (12 to 15 per c.mm.), or slightly higher. Traces of albumin may appear. Since no organisms are obtained the nature of the infection can only be surmised by a foregoing history of ear disease or other infection. The patient complains of pain and there is stiffness of the muscles of the back, especially in the cervical region. Spinal puncture is indicated and may be repeated often. The condition frequently results in spontaneous cure.

As soon as the micro-organisms cause an extravasation of leucocytes into the surrounding tissues and the spinal fluid, the condition is purulent meningitis.

According to this classification our case had serous meningitis.

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HEMORRHAGE FROM THE EAR.*

DR. HAROLD M. HAYS, New York City.

Early in February, I was called in consultation to see a boy of four years. The history was the following:

A few weeks before the child had had a cold and six days before I saw him had developed an acute otitis media in the right ear. The bulging drum was properly incised by the pediatricist who was taking care of the case. The incision had been extended into Scrapnell's membrane. At the time of the paracentesis, there had been the ordinary amount of bleeding. A few days later the child developed an abscess of the leg which was incised. Again, at this time, the bleeding had been very moderate. There was no history of bleeding in the family.

The ear discharged a moderate amount of serum and pus for six days during which time the temperature rose to 101° in the evening. On the sixth day the discharge ceased. The following morning, when the mother went over to awaken the child, she found him lying in a pool of blood. There was a continuous flow of blood from the ear which she was unable to stop. The pediatricist saw the child a few hours later. When he removed the clot of blood from the ear canal he could see a flow of blood from the perforation which still remained. I was called in to see the child later in the day. On removing the clot from the ear canal I was able to see the perforation for a moment, but then the canal immediately filled with blood. I tried remedies, such as adrenalin, bismuth and thrombo-plastin, but none of these would stop the hemorrhage. I then packed the canal with bismuth subnitrate gauze and put on a tight compression dressing.

Within twelve hours the packing had been forced out of the canal and the compression dressing (the size of a large mastoid dressing) was completely saturated. Later in the day Dr. Friesner saw the case in consultation with me. The child was running a low-grade temperature up to a trifle over 100° , but complained of no pain or discomfort. We discussed the possible source of the hemorrhage and came to the conclusion that it came from a dihiscence in the bone of a misplaced jugular bulb which apparently was near the point of the original incision in the drum. Why this hemorrhage

*Read before the Otological Section, New York Academy of Medicine, May 14, 1920.

should have occurred six days after the original incision was made, it is hard to say. Dr. Friesner and I decided to leave the child alone for the time being, watching him carefully. Another compression dressing was applied but by evening this had become soaked through. I then removed all dressings and the clot from the canal. I allowed a new clot to form and kept it under slight pressure with a small piece of cotton. When this became soaked through I applied another piece of cotton on top of this one and kept up this procedure until I had applied about twenty pieces of cotton, one on top of the other, until they formed a hard plug to the canal. A compression dressing was again applied. At the end of twenty-four hours I removed the plug and found that the hemorrhage had ceased. A small perforation could readily be seen just below Shrapnell's membrane.

A few days later a mucopurulent discharge from the middle ear again began. For three weeks this continued with slight rises in temperature up to 101° . There was slight mastoid tenderness which eventually disappeared with the subsidence of the discharge.

All of us have seen profuse bleeding from the middle ear at the time of paracentesis and hemorrhage is likely to occur in bleeders and in children with marked anemia. But I have never seen a profuse hemorrhage which could not be controlled. That this bleeding took place from the jugular bulb is problematical, but is the only explanation that can be given. Why it should have ceased after a certain length of time with no more attention to it than indirect compression, one cannot say.

2178 Broadway.

DOES REMOVAL OF ADENOID VEGETATIONS PREVENT ACUTE DISEASE OF THE MIDDLE EAR?

DR. JOHN ZAHORSKY, St. Louis.

This article is written not with the intention of discrediting the recognized value of adenoid removal—an operative procedure which does so much good in selected cases—but its purpose is to assist in determining the indications and contraindications of the operation.

The aurist has found that adenoid removal frequently assists in the cure of a protracted or recurrent otorrhea and even small projections of adenoid tissue in the naso-pharynx are regarded with suspicion. There is no doubt that this operation by removing an infected area and by draining the mucous membrane does give the body a better chance to throw off the infectious process in the middle ear. This favorable experience is common enough and gradually the impression has been produced that acute inflammation of the tympanic cavity is due to the presence of adenoid vegetations in the pharynx. Even mastoid infection has been etiologically connected with hypertrophy of the pharyngeal tonsil. Hence the question—does removal of the adenoid vegetations prevent acute disease of the middle ear?

In another place (*Interstate Medical Journal*, Vol. 26, No. 1) I have already touched upon this subject. My own observation goes to show that children under eight years of age who have had their pharyngeal tonsils removed have about as much trouble with their ears as those who have not been subjected to the operation. After adenoid removal the mucous membrane of the naso-pharynx may be infected and the infection invade the tympanic cavity unless a normal resistance is acquired.

I studied the records of my patients during the last three years. In this series were 220 children who had their adenoids or adenoids and tonsils removed. Many of these were over nine years of age and were relatively immune to respiratory diseases.

I found thirty-two children who had one or more attacks of acute otitis media. Brief histories of twenty-nine cases will be given:

Note. Since writing the above I have encountered twelve more cases of otitis media in young children who have had their adenoids removed.

Case 1. S. B., 8 years old, boy; had his pharyngeal and faucial tonsils removed when 5 years of age. When 7 years old he passed

through a severe attack of pneumonia. Last winter had a double otitis media suppurative with mastoid involvement, which, however, gradually subsided without operation. Both ear drums were incised but an irregular fever persisted for nearly two weeks with copious discharge from the ears.

Case 2. T. L., girl. Was first seen when 9 years old. She had a grippal bronchitis with moderate fever (101°). Had another attack two months later. Her tonsils and adenoids were taken out when she was 6 years old. Three months later she suffered from a severe suppurating middle ear disease. The ears discharged for several weeks. The adenoids were again removed when she was 7 years old.

Case 3. E. H., 6 years old, boy. Subject to bronchitis. One attack of otitis suppuration when 2 years old. Tonsils and adenoids removed one year ago. Now has severe bronchitis and catarrhal otitis media.

Case 4. R. C., boy, 8 years old. Adenoids were removed when he was 5 years old. Otitis media suppuration when 3 years old. He has had three attacks of non-suppurative otitis media in the last three years.

Case 5. P. C., 6 years old, boy. Adenoids and tonsils were removed at 5 years on account of persistent cervical adenitis. Now has severe bronchiolitis and otitis media. Recovery without suppuration.

Case 6. B. C., 5 years old, boy. Tonsils and adenoids removed three years ago. Had Spanish influenza, complicated with a serious pneumonia. Two weeks later he suffered from acute otitis. No suppuration.

Case 7. J. O., 6 years old, boy. Several attacks of bronchitis, lately tonsillitis. Tonsils large, but adenoid vegetations were removed when he was 3 years old. Two attacks of otitis media. Last week he has suffered from a severe catarrhal inflammation of the nose and bronchial tube, followed by a double suppurative otitis.

Case 8. D. P., girl, 7 years old. Tonsils and adenoids removed at 4 years. Broncho-pneumonia the first part of the winter and now has "cold" with acute catarrhal otitis.

Case 9. M. L., 6 years old, girl. Adenoids removed when 2 years old, and both tonsils and adenoids at 5 years. Several attacks of bronchitis and one of acute otitis since.

Case 10. M. M., 6 years old, boy. Had broncho-pneumonia when 7 months old, pyelitis at 2 years. He has been well the last three years. Entered kindergarten last fall. Had three attacks

of middle ear inflammation during the winter. Ear discharging now for three weeks. Tonsils very large. Adenoids removed at 2 years.

Case 11. O. M., boy, aged 6 years. Adenoids and tonsils removed two years ago. No colds last two years. Now has acute otitic suppuration associated with bronchitis.

Case 12. H. M., 8 years old, male. Subject to acute catarrhal affections of the respiratory tract. Adenoids and tonsils excised two years ago. Last Christmas took a "cold," followed by bronchitis and middle ear inflammation. Both ears suppurated. General condition poor.

Case 13. H. V., girl, 6 years old. Has recurrent attacks of laryngitis and bronchitis. Tonsils very small and not subject to inflammation. The adenoids were removed at the age of 5. In February, 1919, was sick several days with grippal angina and otitis media catarrhalis.

Case 14. V. W., 6 years old, boy. Very nervous. Subject to bronchitis. Tonsils and adenoids removed when 4 years old. Suffered from frequent attacks of earache and bronchitis.

Case 15. M. S., boy, 9 years old. Subject to repeated attacks of bronchitis. Tonsils and adenoids were removed at 3 years of age. Two attacks of otitis media in the next six years.

Case 16. E. B., boy, 9 years old. Had an abscess in the ear when 1 year old. Subject to repeated colds. Very nervous boy. Adenoids removed at 6 years of age. Repeated attacks of earache since but no suppuration.

Case 17. C. A., girl, 8 years old. She has a long history of mucous colitis, pyelitis, bronchitis and tonsillitis. Tonsils small. Adenoid vegetations were excised at 2 years of age. She has had three attacks of otitis media since, once suppurating.

Case 18. B. E., girl, 7 years old. The little patient has had an acute catarrh for several weeks, dry, croupy cough. She is subject to bronchitis. Tonsils and adenoids removed one year ago. Now has disseminated bronchitis and acute inflammation of the middle ear. Gradual recovery of the ear without suppuration.

Case 19. R. H., boy, 7 years. Had large tonsils and adenoids which were removed in May, 1918. Took a severe cold six weeks ago (October, 1918) with the right ear drum inflamed, followed by suppuration. Bronchitis was associated with the ear inflammation. The ear discharged for six weeks.

Case 20. S. L., 5 years old, boy. Suffered from repeated attacks of colitis as an infant. One attack of bronchitis when 2 years old.

Then followed repeated attacks of tonsillitis. Adenoids removed at 2 years of age. Tonsils and adenoids removed at 4 years of age. Severe double suppurative otitis media when he was 5 years old. This was preceded by a general bronchitis. Always has a stuffy nose. Another attack of acute catarrhal otitis media occurred eight months later.

Case 21. C. E., aged 5, boy. Has had a cold recently and complains of his ear. Does not hear well. Both ear drums inflamed. Adenoids and tonsils removed one year ago.

Case 22. A. G., girl, 5 years old. Her adenoids were removed in September, 1917. Severe suppurative otitis media (Streptococcic) developed in the spring of 1918. Influenza, December, 1919, with double otitis media; one ear drum had to be lanced.

Case 23. B. G., boy, 4 years old. Adenoids were removed in the spring of 1918. Influenza, December, 1918. Suffered from acute catarrhal otitis media at the same time.

Case 24. F. B., boy, 7 years old. Subject to colds. Has had measles and whooping cough. The tonsils and adenoids were removed in June. In October had an attack of bronchitis and otitis media catarrhalis. The glands in the neck were enlarged and subsided very slowly.

Case 25. B. E., boy, aged 7 years. Has been subject to repeated colds all his life. Tonsils and adenoids removed one year ago. Now (October, 1918) has a severe cough and slight fever. Coughs incessantly. Bronchitis. Two days later had acute catarrhal otitis media. Recovery of bronchitis and otitis slow.

Case 26. R. M., girl, 6½ years old. Tonsils and adenoids removed at 3 years of age. She suffers from severe coughing spells every winter. Had acute suppurative otitis media one year ago. Now has another attack, double otitis media; one ear discharging. Severe cough. Physical signs of the chest were negative.

Case 27. M. L., girl, 6 years old. Was first seen suffering from a suppurative otitis and bronchitis. The bronchial inflammation subsided and an aurist treated the ears. She had her pharyngeal tonsils removed two years before. The aurist removed the adenoid tissue again. Gradual recovery.

Case 28. H. C., 10 years old, boy. Has been a cripple with cerebral palsy. Adenoids removed when he was 6 years old. Two attacks of ear inflammation in the last four years.

Case 29. S. S., boy. When he was 2 years old had his pharyngeal tonsils removed, although no enlargement was apparent, with the hope that asthmatic attacks might be prevented. Appar-

ently there was a favorable effect on the asthma for a few months, but the following winter had several paroxysms. When 4½ years old he had a severe septic otitis media suppuration, which was accompanied by intense general symptoms.

Conclusion. We cannot depend on adenoid removal as a prophylactic in acute infections of the middle ear.

I ask the question: May not healthy adenoid tissue by absorbing bacteria and their products have a protecting influence on the spread of catarrhal inflammation and consequently on acute infections of the tympanic cavity?

536 N. Taylor.

"A SIMPLE, BLOODLESS TONSILLECTOMY, WITH A SIMPLE, SAFE, LOCAL ANESTHESIA."

DR. JOHN A. THOMPSON, Cincinnati.

Under the above title in the September number of *THE LARYNGOSCOPE* Dr. Sol Rosenblatt describes a method of obtaining local anesthesia that is almost ideal. If he appreciates the anatomical details that explain the success of the method, he does not mention them in his article. In the July, 1917, number of the *Ohio State Medical Journal* there is an article with an anatomical illustration showing why a method of injection, very similar to Dr. Rosenblatt's, is so successful. The special dissection of the nerve supply of the tonsil, made for me by Prof. Knower at the University of Cincinnati, shows, just external to the constrictor muscles of the pharynx, a connective tissue space in which lie the vessels and nerves in the neck. Just external to the anterior pillar this space is covered only by mucous membrane. A needle inserted one inch, the point directed slightly away from the median line, in this connective tissue space, will surround the glosso-pharyngeal nerve with the procain solution and the nerve will be blocked. The palatine nerve can be blocked where it leaves the posterior palatine foramen better than by Dr. Rosenblatt's injection in the palate. The solution injected external to the tonsil, pushes it into the throat, puts the blood-vessels on such tension that they contract instantly when cut, and reduce the hemorrhage to the minimum. After five years' use of the method I find it almost ideal. My later experience with it will be published in the transactions of the American Laryngological, Rhinological and Otological Society for 1920.

LOCAL ANESTHESIA IN NASAL AND THROAT SURGERY.

DR. OSCAR WILKINSON, Washington, D. C.

The majority of the operations directed toward the relief of diseases or deformities of the nose and throat in grown subjects can be performed under local anesthesia. I shall invite your attention first to the anesthetics used, then to the selection of patients and their preparation, and finally to the operations, with their indications and limitations.

Anesthetics Used. As a local external anesthetic, cocain is used in solutions, from 6 per cent to 10 per cent in strength, to which five drops of adrenalin solution are added. As an injection, I use a 1 per cent solution of procain, to an ounce of which ten drops of adrenalin solution are added. Inasmuch as the method of anesthesia in each operation is so important, I shall discuss this phase of the subject more fully under the different operative procedures.

Selection of the Patients. In the first place, operations on children less than 15 years of age, as well as the removal of adenoids at any age, even in grown subjects, are never undertaken by me under local anesthesia. As a rule, my operative procedures under local anesthetics have been limited to the adult. In highly nervous patients, whose dread of the knife or the sight of blood prejudices them against the use of local anesthesia, I advise a general anesthetic. I never insist on any patient's submitting to an operation under local anesthesia against his or her wishes, but give such patient a frank statement as to what I consider the best anesthetic in that particular case, and with few exceptions, my advice is accepted and not afterwards regretted. It is needless to say that most of my operative work on nose and throat in the adult is done under local anesthesia.

Preparation of the Patient. All my work is done in a hospital. A few years ago there were a number of papers read on "Tonsillectomy, a Hospital Procedure." I have about come to the conclusion that all operations are hospital procedures.

The patients are given a laxative the second night before the operation; full meals are allowed the day before. I operate early in the morning, and no food is given to throat cases. In nose cases a light breakfast is permitted but not advised. Thirty minutes before

the operation a hypodermic injection of one-half grain of codein is given. In some few cases, where prolonged operations are anticipated, morphin and scopolamin are administered instead.

Operations on the Nose. In cauterization of the turbinates and the removal of polypi, usually the local application of cocain is sufficient. In inferior turbinotomy and removal of the anterior portion of the middle turbinate, I usually inject a small amount of 1 per cent solution of procain after the use of a small quantity of cocain. In all operations on the nose, where the incision is in the skin or approaches near the skin, procain injections are essential.

In sub-mucous resections, an attempt is made to block the nerves. Cocain is first applied to the septum on each side with cotton-tipped applicators. Then procain injections are used. I try first to place a few drops underneath the mucous membrane of the septum on its posterior portion just opposite the location of the sphenoid openings, since the branches of Meckel's ganglion pass into the septum at this point. A second point for injection is at the anterior superior portion of the septum. Here the anterior nasal nerve can be blocked. In the anterior portion of the septum on either side, a few drops of procain are placed, an effort being made to put the solution underneath the perichondrium, as this facilitates the elevation of the mucous membrane during the operation. If there is a heavy, bony deviation at the floor of the nose, on either side, this must also be injected to prevent pain while it is being chiseled away. A complete and extensive sub-mucous resection of the septum can, in this manner, be performed without the least discomfort to the patient, and often without the loss of two drachms of blood.

In maxillary antrum cases cocain is rubbed on the naso-antral wall under the inferior turbinate and procain is injected beneath the mucous membrane of the wall and forward toward the vestibule of the nose. One can now do the Canfield-Ballenger, the Skillern, or make an opening through the naso-antral wall.

In ethmoid operations a satisfactory anesthesia is secured by injecting 10 minims of procain into the region of Meckel's ganglion and placing one or two small pledgets of cotton saturated in 10 per cent solution of cocain in the ethmoid region and permitting them to remain there ten minutes.

The sphenoid sinus is anesthetized by painting the anterior wall, the os sphenoidalis, and the sphenoid cavity, when possible, with a 10 per cent solution of cocain, taking care to prevent the cocain from running into the pharynx.

In intra-nasal frontal sinus operations 10 per cent cocain solution is used.

Nasal deformities such as saddleback, ridges and dip noses can be corrected and transplants inserted under local anesthesia; in cases where extensive fractures of the bone are necessary, or in which large transplants are required, such as Carter's rib transplant, a general anesthetic is necessary. In radical operations on the frontal sinus, such as Killian's or Lothrop's, local anesthesia is not practical; however, it is possible.

Operations on the Throat. The various abscesses, i. e., the peritonsillar and the retro-pharyngeal, are best operated on by use of cocain locally, and in some cases the superficial injection of procain. As stated before, I never undertake the removal of the pharyngeal tonsils under local anesthesia.

The faucial tonsils in adults are best removed under local anesthesia, barring the exceptions previously mentioned. I have on a previous occasion, before this society, described my technique of anesthesia, which consists in the local application of 6 per cent cocain, applying same on the anterior and posterior pillars and on the surface of the tonsils, making only two or three applications, and on the pharyngeal wall in subjects who are prone to gag. After waiting for a few moments I use injections of 1 per cent solution of procain, using about 5 or 6 cc. to each tonsil.

In a recent issue of the *A. J. of Surgery* there is an article on "The Advantage of General and Local Anesthesia in Tonsillectomy," in which the author condemns, and justly so, the attempts previously made in some of the clinics and in some offices, at the removal of the tonsils and adenoids after a few swabs of cocain on the surface of the tonsil. Such work is, or was (as I do not believe anyone is now attempting such practice), unscientific and unworthy of the profession, and should not be mentioned as local anesthesia. The author summarizes his advantages of general anesthesia as less hemorrhage, less shock, less trauma and more complete work and greater safety.

I have done more than a thousand tonsillectomies, and my summary would be exactly as his: less hemorrhage, less shock, less trauma, more complete work and greater degree of safety.

With a perfectly dry field, as I usually have, and each step of the operation in perfect view, decidedly more perfect work can be done. The tonsil in its capsule can be removed with less traumatism to the pillars, which means less hemorrhage and less after-soreness and less scarring. As to safety, there is absolutely no comparison. Any-

one who does any local anesthesia surgery at all uses more procain in many cases than I use in my tonsillectomies and never see any constitutional symptoms.

As to shock, most ether cases undergo more shock before they get under the anesthetic than my cases ever receive. I have difficulty in persuading many of them to go to *bed* after I am through.

The lingual tonsil is anesthetized by swabbing with cocain 6 per cent to 10 per cent, and then injecting 1 per cent procain. It can then be cauterized or clipped off with a lingual tonsillatome. Cocain and procain are used in uvulotomy.

Cocain is used in working in the larynx in adults. It is not safe in children; no anesthesia is best in these cases. Where time permits, local anesthesia is the choice in tracheotomy.

With the exception of adenoidectomy, the radical operations for pan sinusitis and radical laryngeal surgery local anesthesia is the anesthetic of choice in practically all surgery of the nose and throat.

During the past three years I have done more than 100 sub-mucous resections under local anesthesia, and the average time taken has been thirty minutes. The discomfort to the patient during the operation was not more than is usually felt in having a tooth filled. The ease with which one can operate, on account of the bloodless field, is a great satisfaction. The operator can see what he is doing and can thus avoid perforations. In my last 100 consecutive cases I have not had a perforation of the septum. The bloodless field enables one to work faster and do better work than is possible under ether.

During this same period I have operated on thirty-one ethmoid, twenty-one sphenoid, forty-two frontal and forty-seven maxillary sinus cases, and have had not more than two patients to whom I would give ether if I had to re-operate. Out of 1,000 tonsillectomies not more than a dozen have expressed their desire for ether in case of future work, whereas my most willing local subjects are those who have previously taken ether.

The one great advantage of local anesthesia is that many subjects who are poor ether risks can be operated on with impunity. I have removed tonsils in persons above 80 years of age, and have operated on fat subjects with sub-acute bronchitis suffering from chronic Bright's disease, with associated high blood-pressure, without untoward symptoms; a result not to be expected after ether anesthesia.

CHRONIC ATROPHIC CATARRH OR FETID OZENA.

DR. JAMES S. REYNOLDS, Minneapolis, Minn.

Most physicians who have come in contact with the above condition, have been very much in the dark as to the true etiology, and even more so as to a satisfactory treatment. Some six years ago I collected thirteen cases and, with the idea of focal infection of tonsils, adenoids, sinus, teeth, drainage from the eyes and ears, as the underlying cause, made a very exhaustive examination. In eleven cases I removed all the foci, but got very little permanent improvement. However, I still advise the removal of all foci and obstructions in these cases.

I wish to report my results in a series of seven cases treated during the last three years. They all presented the classical picture of a fetid ozena, crusting, atrophy, odor, loss of smell, ulceration of mucous membrane, more or less dull headache. In all, the Wassermann was negative. None suffered from a constitutional disease; the physical findings being negative.

Bacteriology. Perez was present in six, Abels in three, staphylococci in three, diphtheroid in four.

The following treatment was used in all the cases. The nares were cleansed with an alkaline spray, and into the entire mucous membrane and posterior nares, was massaged a 4 per cent Scarlet Red Emulsion (Parke, Davis & Company) experimental, and, in addition, two cases received an ozena stock vaccine, experimental. In the remaining five an autogenous vaccine was used. These treatments were given every second or third day. The vaccine dosage varied widely—in a 500,000,000 count, from 6 m. to 2 cc.

In my opinion the good results to be obtained with the use of vaccines are not in a standard dose, but in a combination of dose and patient, with results and constitutional reactions as an index.

Case 1. H. B., male, white, aged 29, farmer; diagnosis, chronic atrophic catarrh; duration, six years; deflected septum resected; number of treatments, twenty-eight; results, two years after treatments, no evidence of disease; sense of smell returned.

Case 2. T. S., female, white, aged 33, nurse; diagnosis, chronic atrophic catarrh; duration, fifteen years; patient has had a great deal of headache; number of treatments, thirty; results, six months after treatment, no headache, nose normal in appearance.

Case 3. N. B., male, white, aged 22, farmer; diagnosis, chronic atrophic catarrh; duration, fifteen years; number of treatments,

eighteen, six months later was given ten more; results, for the past year, no recurrence, nose appearing normal.

Case 4. G. M., male, white, aged 17, student; diagnosis, chronic atrophic catarrh; duration, ten years, atrophy very marked; number of treatments, forty-four; results, eight months after treatment, marked improvement in nasal mucous membrane, entirely free of crusts.

Case 5. N. S., female, white, aged 16, student; diagnosis, chronic atrophic catarrh; double ethmoiditis, nasal polypii, deflected septum to left, headache continuously; duration, eight years; number of treatments, forty-four; results, one year after treatment, nose entirely clear, an occasional headache, which is not ocular.

Case 6. E. M., female, white, aged 10, scholar; diagnosis, chronic atrophic catarrh; duration, six years; number of treatments, fifty-one; results, still under treatment, but with a clearing up of all conditions.

This treatment may not be a specific for this unfortunate condition, but with the improvement that I have obtained in some of these cases, which are apparently well after two years, the results are very encouraging indeed.

EAR MASSAGE WITH A POLITZER DIAGNOSTIC TUBE.

DR. ISIDOR F. SHAPIRO, New York City.

In cases where it is advisable that the patient have his ear drum massaged two or three times daily, this can be accomplished by the patient himself with an ordinary Politzer diagnostic tube.

One ear-tip is placed in his ear, and the other tip in his mouth. Then by puffing out his cheeks or sucking them in, he can give himself all varieties of massage—Compression-release, suction-release, suction-compression. And there is no danger of too much force, as there is with a machine, for he can adjust it to his own comfort.

This method has an additional advantage in being applicable to children as well as adults. It intrigues the child's confidence, and becomes like a game for him to massage his ears himself; and he thus receives massage which he otherwise would be deprived of by his fears of the doctor, and which is often essential after an O.M. P.C. case, if the child is not to be hard of hearing in later life.

355 East 149th Street.

THE FALSETTO VOICE IN THE MALE—WITH A DEMONSTRATION OF FOUR CURED CASES.*

DR. JAMES SONNETT GREENE, New York.

The general characteristics of the voice in childhood are essentially the same in both sexes, although there are certain characteristics which distinguish boys' voices from girls' voices, before the age of puberty. The child's larynx between the age of five or six years and the age of puberty does not develop much, it hardly undergoes any gross anatomical changes, and it does not possess any essential differentiating features so that sex can be determined. Though the larynx of the child is smaller than that of the adult and the vocal muscles are comparatively feeble, the quality of the voice is peculiarly penetrating. Most children possess a principal register, the so-called middle voice, which serves their purpose for both singing and speaking. This register ranges from about *b* to *f* sharp.² It is exceptional for this principal register to exist alone, as there are usually present some pectoral and falsetto tones. In boys the pectoral tones gradually increase up to puberty. After puberty is reached, concomitant with the general systemic changes that occur, pronounced changes of the larynx and voice take place. These are more obvious in the male, whose larynx takes on a rapid growth, especially in the transverse diameter, than in the female, whose larynx, although it grows in the vertical diameter, remains comparatively small and delicate and has a nervous organization which is often highly tensioned. The growth of the larynx causes a sudden enlargement of the glottis, which becomes twice its former size in males, while in females it increases only about half as much.

The larynx, through the change in the shape of the thyroid plates, grows forward so that there is greater prominence to the part which is commonly designated as the Adam's apple, this change being less marked and more gradual in the female. Neck measurements indicate that the position of the larynx is a little higher in females than in males. The vocal cords in males during this development become more elongated than in females, and this, plus the change in conformation, explains why the male voice is of lower pitch and usually stronger. The pitch of the voice depends on the

*Read before the Section on Rhinology and Laryngology, New York Academy of Medicine, March 24, 1920.

number of vibrations the vocal cords make during a second of time, and the number of vibrations depend on the length and width of the aperture through which the air passes plus the degree of tension of the cords. The longer the cord, the less tension; the wider the glottis, the lower the voice.

The vitality of the genital organs has a decided influence on the development of the voice, it being noticed in both young and old; in the young when the genital organs obtain full vigor and in the old when there is loss of vigor.

The period of mutation of the voice is very irregular in both girls and boys. Girls' voices break less often than boys', gradually becoming fuller and increasing in resonance. Boys' voices, after frequently breaking for a considerable period, finally become lowered about an octave. The period of mutation is sometimes gradual, sometimes rapid. A child may be slightly hoarse for a few days or weeks and then the voice becomes standardized, or it may take a number of years before a permanent change takes place. Paulson found, when investigating changes in children's voices, as modified by age during the period of mutation, that 50 per cent of children's voices began to quaver at the age of thirteen, 70 per cent at the age of fourteen, and 80 per cent at the age of fifteen. During the change he found the throat often swollen but not the vocal cords; he also found voice control was lost but afterward regained.

During mutation the successive changes in the form and size of the larynx take place so rapidly, that proper realization of the changing conditions of tension is lost, and many bad vocal and speech habits may be contracted. Voices may become coarse or throaty, nasal, aspirate, guttural, growling, or continue in a childish treble; articulation often suffers and pronunciation is slovenly. Objectively, the larynx, irrespective of the vocal cords, sometimes shows a slight hyperemia which in itself is sufficient cause for the raucity of the voice. Often there is a disproportion in growth of the vocal cords and cartilages to which the cords are attached, resulting in an unsteady tension of the cords, which is instrumental in producing a voice that occasionally breaks to a childish treble. At this period, also, a misdirection of afferent impulses, may result in the abuse and nonuse of certain sets of muscles antagonistic in action, that come into play during voice production, causing a partial vibration of the vocal cords, an impairment of resonance, and a misplacement of the larynx, so that it is seen in an abnormally high

position. The voice emanating from such a larynx is a high-pitched, thin, piping voice—a falsetto voice.

A falsetto voice is a voice often reckoned to the head register, its volume and area being almost as large as the chest register, reaching about d^1 to f^2 . It is an octave above the chest register. It is of a thin, shrill quality, sounding forced or unnatural, and, as its name implies, is a false voice. In brief, it is a child's voice produced by an adult, originating at that period of life when physically the boy or girl is man or woman in everything but voice. This voice suggests a lack of muscular control besides a disturbed balance in the respiratory act. Of the vocal anomalies that occur during or following mutation the persistent falsetto voice is the one most frequently observed. While the condition occurs in both males and females, most of the cases that come under observation are in males.

The falsetto voice is characteristic of the voice of the eunuch or the eunuchoid. While their voices are practically similar in reference to pitch, ranging between tenor and soprano, they are absolutely dissimilar in reference to origin. Eunuchs are those individuals who for some definite reason have had their sexual glands removed (castration) in early youth, a complicating result of which is nondevelopment of the larynx so that the voice remains high. Eunuchoids are individuals who without being castrated entirely simulate in clinical manifestations the true eunuch type. This condition is due to a developmental disturbance beginning primarily in the sexual glands. One of the symptoms is a change in the pitch of the voice, which becomes high. On account of this similarity the term, eunuchoid voice, has been used synonymously with falsetto voice. The use of this term has given rise to much misunderstanding which in a way is rather unfortunate for those having a falsetto voice, for a falsetto voice of an adult male who is not a eunuch or a eunuchoid does not depend on imperfect genital development, but in practically all cases is the result of a faulty habit which is contracted by the subject at the time of the change of voice and retained in after life.

The relationship between pubescence, voice and genital organs has been noticed by lay persons as well as by medical men. From remote antiquity among the Orientals, as also a later period in Greece, eunuchs were employed; and on account of the unnaturalness of their voices, observation and comment was made. Only until recently in Italy castration of boys was practiced in order to hinder the natural development of the voice. These castrated boys were carefully trained vocally, so that when older they comprised the

adult soprano singers of the Sistine Chapel. At present there exists a secret religious sect in Russia known by the name of Skopzi, whose members voluntarily undergo emasculation in order to avoid sexual sin or temptation. They are recognized by their falsetto voices. Thus from time immemorial it has been well recognized that a definite relationship exists between the sexual organs of the male and his vocal apparatus. In the female this relationship has been demonstrated only comparatively recently. Since oophorectomy has been done definite voice changes have been noted. Following an oophorectomy the female voice assumes a slightly more masculine timber without involving much change of pitch.

From the above one can readily understand why adult males who speak in high-pitched, childish voices carry a stigma of doubtful sexuality which is decidedly humiliating and undeserved. Lack of knowledge of the subject has resulted in misleading conclusions. If it were generally known that a falsetto voice may be a purely functional condition, that there may be no pathological involvement of the organs of voice or the organs of generation, and that the condition may be classified as a faulty habit, judgment would not be so readily passed on a person's physical condition by simply hearing his voice.

Various reasons are given for the occurrence of this faulty voice condition. Its cause may be a disproportion in growth or partial development of the larynx. If for some reason the larynx of an adult has failed to develop, the voice of that adult will be childish. In most cases, however, a disproportionate action of the laryngeal muscles accounts for the trouble.

The larynx is poised in the correct position for speaking or singing through an equalized tug that goes on between the levator and depressor muscles. If for some reason the pull on the depressors is stronger and the larynx is lowered from its normal position the voice assumes a heavy and unnatural low pitch. On the contrary, if the pull of the levators is stronger and the larynx is raised high in the throat the voice assumes a thin, high pitch. With this there is an abnormal action of the intrinsic muscles of the larynx, the tension between the cricothyroid and thyroarytenoideus (vocalis) is irregular so that an interference with the complete vibrations of the vocal cords takes place, the cords only partially vibrating. These changes necessarily produce a disturbance of the normal resonance. The voice emanating from a larynx which has undergone such changes is a falsetto.

—These patients through the constant use of their high voices make permanent the misdirected action of their phonatory muscles. The larynx remains high up in the throat. The movement of the true and false cords is interfered with. The free vibratory edges of the true cords become reduced to about half the normal length, giving a short string which always produces a high note. The false cords sag through diminished tension. The size of the ventricles of the larynx become reduced, thereby reverting to its original boy or girl size, and producing a change in resonance.

A sensitively organized child, especially a boy, is rather surprised and shocked at his initial voice changes when passing through his mutation period. He tries to continue as he was accustomed to hearing himself speak, thereby causing a faulty co-ordination of his laryngeal muscles, and instead of using the chest register he exerts all powers in the use of the head register, which seems to him to be easier, more natural, and more restful.

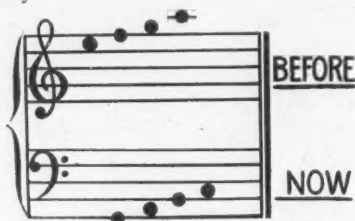
This voluntary effort frequently repeated becomes automatic and thus this faulty habit is acquired. If allowed to remain uncorrected it continues during the rest of one's life. I know a man, sixty years old, who speaks in a high falsetto. He is unmarried and has never cared to undertake any treatment. His voice condition may be the cause of his celibacy. I know another man, a physician, about sixty years old, who speaks in a high falsetto. His voice condition apparently did not interfere with his marriage, he being the father of four children. To my knowledge he never took any treatment for his condition. Young men in training for theatrical careers often adopt the head voice, or falsetto, as part of their stage aramamentarium; by so doing they can assume either a male or a female part. Again, some young men are capable of speaking either in a falsetto or a baritone, and sometimes when they use their falsetto voice extensively, they find to their dismay that they have lost their baritone.

The prognosis of all these cases is always favorable unless the condition, when in the male, is one of eunuchoidism.

When treating these cases a number of factors must be given consideration. The general physical condition of all these patients must be improved. A tonic for the nervous system is indicated. Pathological conditions of the vocal organs requiring surgical measures should be instituted. Massage and electricity play an important role in overcoming the faulty co-ordination of the laryngeal muscles. The depressors are developed so that the tug between the levators and the depressors becomes equalized and thus the proper

laryngeal balance is established. This muscular co-ordination is further established through definite vocal exercises executed in notes of lower pitch than the falsetto. These exercises are also instrumental in promoting normal action of the vocal cords. Through the carrying out of these different measures the faulty psychical element, which is always present in these cases, is counteracted and the patient's psychical as well as physical anomalies are eliminated.

The treatment usually does not require an extensive period of time. Sometimes it is rather difficult to overcome a patient's psychical state. To his ears his voice sounds agreeable, and it takes some time to educate him to recognize the disagreeable qualities which his voice possesses. His or her musical sense must be stimulated and developed and as soon as that is accomplished, the rest is comparatively easy.



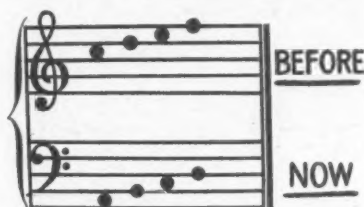
Case 1. Jacob F. Falsetto Voice. Voice Range.

Case 1. Jacob F., American, aged 26, single, admitted to the Clinic December, 1919. Falsetto voice. When sixteen years old, he commenced to suffer from catarrh of the nose and throat. He had trouble with his breathing and his throat was always dry. When speaking his voice sounded peculiar and tired easily. At first he did not know what the trouble was, but after awhile he began to feel that there was something strange about his voice. People began to pass remarks about his high voice and as time went on he realized that he spoke like a girl. He took treatment for his condition at various places but did not improve. About five years ago, at the age of twenty-one, he suffered a severe injury to his nose. He was taken to the Post-Graduate Hospital and operated on. His breathing was improved but no perceptible change was noticed in his voice. He became discouraged about his condition and decided that there was no help for him. Economically it was a great handicap. He never had nerve enough to come forward on any occasion. Always kept in the background, his voice always spoiling the situation, making it ridiculous. Since he left school he stuck to his

first job, that of minor clerk in a clothing store, always afraid to risk looking for a new job. Where he was, the people were accustomed to him and he somehow got along.

When he came to the Clinic, I found him in good physical condition. There was nothing abnormal about his larynx except for position, it being rather high so that the upper margin of his thyroid cartilage was very near his hyoid bone. His sexual history was negative. Since his falsetto voice has been changed to a baritone he has become very brave and says he is not afraid to go around and look for a new job every day if necessary. He is now working in the postoffice. His voice was a typical falsetto ranging from E² to A².

Case 2. Russian, aged 28, single, admitted to the Clinic January, 1918. Falsetto voice. When seven years old he had typhoid fever. Does not remember any other illness after that. A few weeks after his graduation from a school in Russia at seventeen years of age, he met one of his teachers. While speaking to him the teacher asked



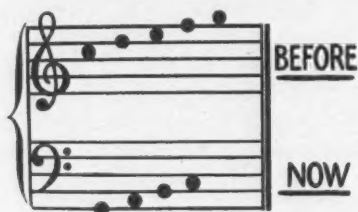
Case 2. Philip P. Falsetto Voice. Voice Range.

him why he spoke in a girl's voice. That was the first time that his attention was called to his voice, although he had some vague throat symptoms previous to that and had intended to see a physician. When he did see a physician he was told that he had strained his throat while speaking. He gradually became worse, suffering at times from complete loss of voice and speech. His voice gave him so much trouble that he got into the habit of first testing himself in order to see whether he could say what he wanted to say. From Russia he went to Paris, took treatment there for some time but obtained no relief. In 1913 he came to this country. His troubles began when he sought work. He became greatly discouraged on account of the ridicule he encountered on all sides because of his falsetto; for instance, on one occasion, after having obtained a position as clerk in a bank, his employer called him into his private office and asked him to talk to the people in a low voice, instead of his high voice, explaining that they would get a wrong impres-

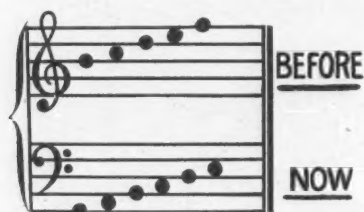
sion of him if he continued as he did. Of course, he could not change and was discharged.

When he came to the Clinic two years ago, I found that his general physical condition was good, but he was of a high-strung nervous temperament. His larynx did not show anything abnormal except for its position. It was high and at times in contact with the hyoid bone. His sexual history was negative. Since his voice has become normal he has changed completely. He holds a good position and is a student at the Brooklyn Polytechnic Institute.

His falsetto voice ranged from C^2 to F^2 .



Case 3. Adol K. Falsetto Voice. Voice Range.



Case 4. Jacob S. Falsetto Voice. Voice Range.

Case 3. Adolph K., Austrian, aged 19, admitted to the Clinic February, 1919. Falsetto voice. When nine years old patient became a boy soprano in a church choir. He sang there for seven years. At the age of sixteen he claims he caught a severe cold, and remembers distinctly that after coughing for a few days his voice became hoarse and remained so for six months, no matter what he did for it. Of course he was unable to sing and had to give up his choir work. Finally when his voice cleared up he found there was a marked change in its tone. His voice was high and weak and had no carrying power, so much so that it could not be heard across the room. His larynx was negative except for position, his physical condition good and sexual history negative. His voice ranged from C^2 to G^2 .

Case 4. Jacob S., American, aged 20, admitted to Clinic July, 1918. Patient's voice began to trouble him when he was sixteen years old. He did not seem to have any control, could not make himself heard and his voice sounded peculiar to him. He gradually came to realize that he spoke in a high shrill voice. He was a high school student and when he came to the Clinic a year and a half ago he had about decided to give up his studies on account of his suffering and embarrassment due to his vocal difficulty. His condition was about the same as the other cases when he first came to us. Now he is able to speak in a fine deep baritone. His voice ranged from B^1 to F^2 .

Another case which Dr. Greene had hoped to demonstrate was that of a patient whose voice was still a falsetto, in order to show the difference between a cured and a non-cured case. On account of his extreme sensitiveness he failed to appear at the very last moment for the demonstration although he had promised to do so.

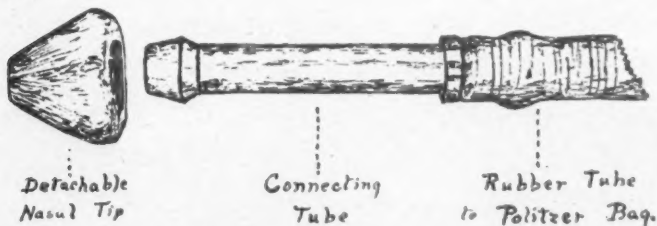
After presenting these patients, Dr. Greene gave a dictaphone demonstration to the entire section of the voices of these patients before and after receiving treatment.

143 East 37th St.

BOILABLE TIP AND CONNECTION FOR POLITZER BAG.

DR. DEAN E. GODWIN, Houghton, Mich.

The desire to use the Politzer bag without danger of carrying infection from patient to patient led to the construction of the above.



The device consists of a metal connecting tube to be attached to the rubber tube of the Politzer bag. The distal end of the metal tube is beveled to connect with the nasal tip which is easily detachable for boiling. With several tips on hand, one may always be ready, without waiting for sterilizing or cooling.

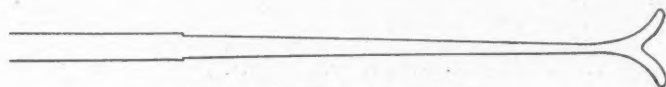
**TECHNIQUE OF CLOSING THE SINUS TONSILLARIS
BY SUTURING THE PILLARS OF THE FAUCES
WITH THE AID OF LA FORCE'S HOLLOW SU-
TURE NEEDLE AND LIGATURE KNOT
FASTENER.**

DR. B. D. LAFORCE, Ottumwa, Iowa.

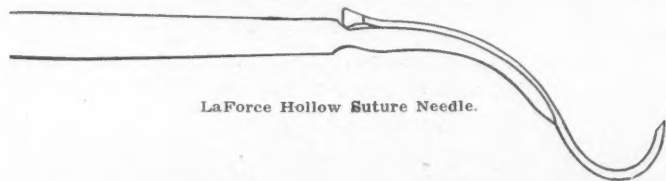
Thread the wire suture carrier with surgeons' silk, 24 inches long, and pass the wire carrier into the hollow needle. The end of the wire should not protrude from the sharp end of the needle.

Under good illumination pierce the posterior pillar, passing through it and on through the anterior pillar, coming out on the anterior surface of the anterior pillar.

With the needle holding the pillars in its grasp, run the wire suture carrier on through the hollow needle so that the end of the wire suture carrier can be clearly seen. Hold the needle firmly to prevent it from being displaced and catch the end of the wire



LaForce Ligature Knot Fastener.



LaForce Hollow Suture Needle.

suture carrier protruding from the sharp end of the needle with any suitable strong forceps. Pull the wire suture carrier completely through the needle, bringing the suture into place. Disengage the needle from the pillars. The suture should now be ready to tie.

To tie the suture make the first knot and hold the two ends of the thread with the left hand. Manipulate the Ligature Knot Fastener with the right hand. Cause the two threads to become engaged in the grooves of the instrument and press the knot into place. Make the second knot and press it into place in the same manner. Two or three sutures will generally close the sinus.

PHILADELPHIA LARYNGOLOGICAL SOCIETY.

February 18, 1920.

The regular monthly meeting of the Section of Otology and Laryngology was held on February 18th, 1920, in the College of Physicians Building, Philadelphia. An address was given by Prof. Joseph C. Beck of Chicago. Dr. Beck showed a great many photographs of interesting cases with sections made of microscopical work extending over a period of twenty years. These embraced epithelium, carcinoma, sarcoma, keloids, angio-mas, etc. Dr. Beck's conclusions were: In those operated upon surgically alone he had a greater percentage of cures than in those operated upon with the combined X-ray and radium treatment. That the technic of applying radium and X-ray should be perfected. That radiographers should be sure to work in conjunction with the Rhinologists and Laryngologists. That laboratory men should examine the blood of the patient receiving large doses of radium to observe any chemical changes. That before a patient could be considered cured of carcinoma or any of these malignant diseases a period of at least five years should elapse. Dr. George Pfahler, discussing the paper, spoke of the radium poisoning symptoms as nausea and vomiting within a few hours, or 24 hours of the first day. That the most difficult carcinoma to cure in the order named are those of the rectum, cheek and tongue. He said it was most important that you should know the number of milligrams of radium used per hour; amount of radium element or age; amount of filtration and arrangement and the square of the distance as ten millimeters makes a great difference in the action of these reagents and we must know these amounts before discussing the technic. Radium devitalizes carcinoma, you get a cellular degeneration, while in X-ray you have paralysis or devitalized tissue. Dr. Pfahler thought primary epithelioma can be cured by non-surgical treatment. Dr. B. C. Randall discussed a paper with some illustrations of sarcoma of the tonsils. Dr. G. B. Wood showed two cases of carcinoma two months after cure by radium. After the meeting a dinner was given to Dr. Beck at the Bellevue Stratford.

The stated meeting of the Philadelphia Laryngological Society was held Tuesday, April 6, 1920, at 9 o'clock, Gadwalader Hall, College of Physicians.

CLINICAL NIGHT.

Neoplasm of the Esophagus Compressing the Larynx. DR. PHILIP S. STOUT.

This is a patient who came to one of the clinics that I had attended about three weeks ago, with the following history: For nine months she has had trouble in swallowing, especially in the last six months. When she first came to the clinic she could only swallow milk, but could speak perfectly well. When we first examined her, we made up our minds that she had carcinoma and asked her to return for further study. But she did not return. We sent her a letter and then sent a social service worker. Today I met her in the clinic of another hospital. The patient is married, 35 years old, and has three children, the youngest two years old. There is no specific infection, no cough, no tumors in family and no difficulty in breathing. She has lost thirty pounds in about nine months.

Case of Maxillary Sinusitis Due to a Misplaced Tooth. DR. HERMAN B. COHEN.

Patient, Miss J. H., 18, presented the following history: Chief complaint—nasal and postnasal discharge, requiring nine handkerchiefs and more a day, for one year; frontal headache which radiated to and behind the ears; obstruction to breathing only in the evening; occasionally vertiginous attacks without nausea or vomiting. Occasionally

neuralgic pain on the left side of the face. Other complaints—nervousness, inability to concentrate, insomnia.

Family history: Nothing of importance relative to the symptoms mentioned.

Social history and habits: Patient states that on rising in the morning, she is tired and not inclined to get out of bed nor desirous to help about in the housework. Appetite is poor and the bowels are costive. Dreams a good deal and the mother adds that the patient is very restless at night. Mother further states that the daughter eats but little and does not mingle with her girl friends and in short appears melancholic and is always frightened.

Past medical history: During infancy and childhood she had diphtheria of the nose, measles and typhoid fever at 4 years of age. On account of a twitch of the right shoulder and a blinking of the eyelids (constantly), general nervousness and the above mentioned symptoms, the patient was treated at the Orthopedic Hospital from Dec., 1917, to March, 1918, for "Chorea." During her stay, she was placed under strict isolation for about six weeks. She was admitted March, 1918, and remained until June, 1918, and discharged "improved." Some time later she was readmitted and on account of some teeth complaints were x-rayed and under ether four teeth were removed. Discharged August, 1918. After spending some time at Atlantic City she returned to the above mentioned clinic irregularly until October, 1919, when on October 7, 1919, she appeared at the Jewish Hospital Clinic with the first mentioned symptoms of nasal discharge, headache, etc., presenting also the blinking of the eyelids, continuously. The history had to be drawn piecemeal and the patient, generally nervous. She also stated that she was afraid to go anywhere alone and had difficulty in remembering recent events.

Examination of the nose: A thickened and deflected septum to the left, pressing against the middle turbinate, a synechia between the left inferior turbinate and septum about half the way back. The right side presented but a slight septal spur. Creamy pus was present in the middle superior nasal passages on the left side.

The throat contained embedded and slightly cryptic tonsils, few adenoids. Otherwise the throat was in good condition. On account of the middle nasal obstruction I removed the left anterior portion of the middle turbinate. At the next visit a needle puncture of the left antrum brought out a milky fluid. An X-ray was then made and revealed a tooth whose crown faced the lateral nasal wall with its roots directed laterally. From the angle in which the X-ray was made, it was at first thought the tooth was fixed in the upper maxilla, in the floor of the antrum. This was later proven otherwise. The patient was then prepared for operation, being placed upon bromides, the antrum being treated conservatively for a few weeks and generally to improve her general condition. On Dec. 8, 1919, Dr. Arthur Watson and myself performed a Caldwell-Luc operation and finding the membranous lining in good condition, the cavity was treated gently. The above tooth being free in the antrum fell into the posterior region, but was easily delivered. Cessation of the nasal discharge was practically instantaneous and her general condition is best described in her own way "I feel that I am living in a different world." The blinking of the eyelids is practically gone, the headaches are gone and on March 21st last, she stated that with the exception of an occasional neuralgia in damp weather only, she felt fine.

I have gone into the history rather deeply because of the interest that her condition and symptoms presented to other specialties in medicine.

For the symptoms early complained of the neurologist was consulted. The nasal discharge, neuralgic pain, etc., called forth the aid of a rhinologist. The X-ray examination was the 'sine qua non' of the case. Having found the exciting factor the interest is greatly shared by the dental surgeon who states that the tooth is an undeveloped one.

Case of Operated Maxillary Sinusitis (Lac-Caldwell) Requiring Secondary Operation (Denker). DR. ROSS HALL SKILLERN.

This patient, female, age 25 years, came to me in 1917. A month or two before I saw her she had an intranasal operation for maxillary sinusitis.

In 1917 I operated on her. I found an old chronic maxillary sinusitis, not of dental origin. I did a pretty thorough operation and the patient was very much better for two months. Then the condition became gradually worse and in the meanwhile I had gone away into the service. When I came back, she came under my observation again, at which time the condition was even worse than prior to operation. The sinus had healed up but the infection was still present. There was no question about her needing another operation and a radical one this time. I scraped out everything, opened up the antrum, taking anterior end of middle turbinate, ethmoids and sphenoid on that side. This operation was performed about six weeks ago. I want you to specially note how curiously the scar has healed for there is a sort of a bridge. The nose is fairly free of crusts now, the patient has gained weight, has appetite now (which she did not have before) and she sleeps well. My reason in presenting this case is the importance of not overlooking anything in doing sinus work for it is no doubt that my technique in the first operation was faulty.

End Results of a Radical Operation for Carcinoma of the Antrum, Maxilla and Naso-Pharynx. DR. DAVID N. HUSIK.

I had the pleasure of presenting this patient at a previous meeting of this Society. At that time we thought it to be adeno-carcinoma. Prior to radical operation, intranasal surgery, radium and X-ray only temporarily improved the condition. In time the eye became very prominent and also the region of the cheek. He was admitted to the University Hospital for radical external operation. Dr. George P. Muller was called in consultation, who suggested that the superior maxilla be completely removed and it was also thought that possibly the man's eye would have to come out. Dr. Muller acted as chief surgeon and I as assistant. The external carotid was ligated, superior maxilla was resected and soft palate cut and naso-pharynx was cleared. Fortunately, the eye was not involved and we did not disturb it. The soft tissues were cauterized with electric cautery. The pathological specimens of the soft tissues were sent to Dr. Smith and superior maxilla to Dr. John Speese; both reported carcinoma. The patient spent a very miserable week following operation for he was unable to swallow except several drams of liquids. He gradually improved, however, and three weeks following operation he was discharged from the hospital in very much improved condition. At present patient has very little pain and has gained weight. Dr. Skillern once said that all carcinoma of the antrum were hopeless. We do not know they recur but from the present condition of the patient, the outlook is very bright. Dr. Pancoast is giving him radium treatment every three or four weeks lasting between 13 and 18 hours, using 50 mil. each time. At present there is no indication for X-ray but by combining the two we may be able to delay recurrence. The patient feels perfectly well now and is attending to work as machinist. It has been four months now since operation.

Case of Acute Mastoiditis Complicated By General Septicemia and Empyema—Operation—Recovery. DR. ARTHUR J. WAGERS.

L. F. C., white, age 31, in military service eight months, was admitted to hospital on January 25, 1919.

Patient stated that about three weeks previously he had been treated for a "cold in the head;" that two weeks later the left ear had begun to discharge through a spontaneous rupture of the ear drum, and that still later a furuncle had developed in the posterior wall of the left external auditory canal and it was because of the pain resulting from the latter complication that he was referred to the hospital for treatment.

Examination of the ear at this time showed the external auditory canal nearly closed from the furuncular swelling and a considerable discharge coming from the middle ear. Aside from the pain of the furuncle the patient suffered no other discomfort. Incision of the furuncle and evacuation of pus relieved the pain. A culture made from the middle ear discharge showed the presence of the hemolytic streptococcus. This infective agent was found in practically all such cases at that period.

During the first twelve days following admission to the ward, patient's general condition was good, but at different times the temperature would rise from approximately normal to 102° but would never remain at this point for any length of time. Mastoiditis was suspected but there were no clinical signs present by which a diagnosis could be made. True, there was the rise of temperature and a leucocytosis of 14800, with 72% polymorphonuclears, but these findings are not peculiar to mastoiditis alone. However, examination of throat, chest, and abdomen was negative.

On the thirteenth day after admission an X-ray examination of the left mastoid was made and the report read, "Marked cloudiness of mastoid cells of side affected."

On the basis of this report I should have operated but hesitated because of the fact that the mastoid itself presented none of the usual clinical signs of acute inflammation. At this time there was no swelling or tenderness over the mastoid and no drooping of the canal wall. The furuncle had subsided and the middle ear discharge was daily growing less in quantity. When the temperature on the eighteenth day reached 104° , a blood culture was requested and next day the laboratory reported hemolytic streptococcus in the blood stream.

There could no longer be any question as to the seriousness of the patient's condition and the urgent necessity for locating the source of infection.

The mastoid region was again carefully explored. There was absolutely no swelling or tenderness on pressure or percussion. There was not the slightest bulging of the external auditory canal wall, not even from the recent furuncle. The discharge from the middle ear had diminished at least 50% since admission and the perforation in the membrana tympani was sufficient to meet all drainage requirements. At this time the patient made no complaint whatever. To all appearances the ear condition was making satisfactory progress toward recovery. The chest was again carefully examined with negative result. Yet I now knew that the patient was, and had been, suffering from a general septicemia which I did not believe was due to the otitis media or to the furuncle.

I was simply forced to the conclusion that the mastoid was the source of trouble and with only the evidence of the X-ray to support me, I decided to open the mastoid as soon as the patient could be prepared.

Operation: Under ether anesthesia the cortex was exposed and found in apparently normal condition—clean, hard, and free from bleeding. Removing the cortex exposed the lateral sinus very superficially located and almost in contact with the posterior wall of the external auditory canal. No pus was found at this point or in the antral region, but proceeding downward, the whole of the tip of the mastoid was found to consist of one large cell or cavity completely filled with greenish pus. A culture made from this pus showed the presence of the hemolytic streptococcus. About three eighths of an inch of the lateral sinus was exposed but no evidence of a perisinus abscess or of sinus thrombosis was found. The dura was not exposed. At the moment of completion of the operative work in the antral region there was a sudden and rather alarming flow of blood. I supposed the lateral sinus had been opened but careful inspection proved that such was not the case. The blood came from the antrum but I was unable to discover its exact origin. Packing with iodiform gauze checked the hemorrhage and the wound was dressed in the usual manner. Patient returned to bed where he reacted well from the anesthetic.

Post-operative developments: That this report may not be too lengthy I shall omit numerous details of progress following operation. Not until the fourth day after operation did anything of very unusual import occur. At this time patient had a chill and temperature rose to 105° . There was a leucocytosis of 26100 with 88 per cent polymorphonuclears. The mastoid wound was dressed and found in good condition. At this first dressing there was practically no pus in the wound, but on removing the packing there was the same copious hemorrhage noted at time of operation. The most remarkable thing about this was the ease with which the bleeding was controlled. A strip of iodiform gauze lightly inserted was

sufficient to check the bleeding entirely and there was no hemorrhage of this nature at subsequent dressings.

At this time there was slight tenderness over the left jugular vein and over the posterior cervical muscles on both sides of the neck.

Absence of headache, vertigo, nausea, vomiting, choked disc, subnormal temperature or slow pulse, excluded to my mind the presence of either meningitis or thrombosis. Not until two days later did the patient complain of soreness in the chest and found breathing somewhat of an effort. Beginning pleurisy was then noted on both sides of the chest on this, the sixth day after operation.

Three days later the right pleural cavity was aspirated by Lieut. Habliston and 775 cc. of a light greenish fluid was withdrawn. This was cultured and also found to contain the hemolytic streptococcus. On the first of March, or sixteen days after operation, the patient was transferred to the empyema ward where the chest condition was most efficiently cared for by Lieut. McCabe. I continued dressing the mastoid wound until healing had taken place which required about six weeks from the time of operation.

During the months of March and April the patient's condition was further complicated by the appearance at intervals of a series of abscesses, four of these being located on the lower limbs, one in the ischio-rectal region, and one in the right wall of the chest. The pus from all these abscesses contained hemolytic streptococcus. The general plan of treatment followed in dealing with these abscesses consisted in providing free drainage and Dakin irrigation every two hours.

During these two months the patient's general condition was very poor, so poor in fact that no one who saw him during those weeks entertained the slightest hope of ultimate recovery. He became markedly emaciated and anemic. Blood counts were made at intervals. On March 1, for example, the red blood count was 2,750,000; white cells 40,000, with polymorphonuclears 90 per cent. Again on March 19 the red blood cells numbered 2,800,000, white cells 25,000 with 78 per cent polymorphonuclears. On April 2 the red blood cells had increased to 3,450,000 and continued to increase gradually from that time.

By the first of May all the abscesses had healed, but drainage still continued from the pleural cavity until about the first of June when the drainage catheters were removed and the opening in the chest wall allowed to heal. From this time on the patient's general condition improved so rapidly and so satisfactorily that he was able to leave the hospital on July 24, nearly seven months after the initial ear disturbance.

The outstanding facts which make this case of more than passing interest are these:

The otitis media did not develop during or following either influenza, pneumonia, or measles, as did most of the acute ear conditions coming to our attention at that time.

The only positive evidence of mastoid involvement previous to operation was afforded by the X-ray.

While practically all cases of acute otitis media and mastoid disease showed the presence of the hemolytic streptococcus in the discharges, this was the only case coming to the ear department showing such marked virulence of the infecting organism.

And finally, the fact that the patient recovered was little short of miraculous. For this highly agreeable outcome, the greatest credit is due to the skill and untiring attention given to the empyema and various abscess complications by Lieuts. Habliston and McCabe.

Case of Modified Radical Mastoid Operation. DR. LEWIS FISHER.

The case I want to show this evening is one which you could not say I achieved a wonderful success with. The patient first presented himself a couple of years ago with symptoms of acute labyrinthitis. He was placed in the ward and operation advised. He refused operation and after about a week or ten days, condition improved and we lost sight of him. He appeared again in January of this year complaining of vertigo, headache and very fetid discharge from his ear, which was filled with polyps and this time he was willing to be operated upon. It was hard to decide what

type of operation the man needed. Irrigation of that ear with the polyps in it produced no response whatever, and I did not remove polyps because he had an acute fistula leading into the labyrinth. It was therefore difficult to determine whether the labyrinth was dead or not and whether to do a radical labyrinth operation or just a radical mastoid. After keeping the patient in the hospital for several days the polyps were removed without any untoward results. Upon irrigation of ear I got response. There was little obstruction in that ear and the hearing was no worse than the other ear, although both were not so good. I wondered whether it was worth while to do a modified radical operation in order to save the man's hearing. I did that and while operating I came across a good sized canal in the canal wall and at that time I thought the facial nerve was injured, but as you see, it was not. The day following operation the man developed violent spontaneous nystagmus and vertigo. I removed packing and in a few hours the vertigo disappeared and the spontaneous nystagmus diminished and in a few days disappeared entirely. He was admitted to the hospital January 27 and was discharged February 9th in very good condition. At the present time I find that the labyrinth is dead and the hearing in that ear is totally gone. It is a question as to what happened to that ear. If he had a pure labyrinthitis it would not disappear in two or three days, at least three or four weeks. He has absolutely no function. It is not thoroughly dry as yet. I do not know what is best to do for him now. The man is well and is gaining weight. I found a great deal of necrosis which I entirely cleaned out and saved the entire ear drum. I would be glad to have you gentlemen express your opinions. The discharge is still continuing. I stopped operating because there was severe bleeding and the field of operation was not clear, but the blood did not come from the lateral sinus.

Styloid Process in the Sinus Tonsillaris. DR. SAMUEL COHEN.

I did a local tonsillectomy on this patient and had no difficulties. After the tonsils were removed, I found two pieces of bone, one in each fossae tonsillaris. At present these bony projections are covered with mucous membrane and can only be felt on palpation.

Case of Lupus on the Nose. DR. ROBERT J. HUNTER.

This is really a skin case, but is something that we often see in our clinic. This patient came in chiefly on account of obstruction in the nose and some involvement of the septum. I first thought there was some specific ulceration of the skin, but the Wassermann was negative. The mucous membrane is frequently involved in these cases of lupus. This one shows it particularly. The septum is considerably swollen and there is some crusting. Patient's father died of tuberculosis and brother died with meningitis.

Case of Syphilitic Laryngitis With a Negative Wassermann. DR. BENJAMIN H. SHUSTER.

This case would seem to emphasize the cause which gave birth to the well known phrase "when a feller needs a friend" and the friend does not come, the friend in this particular instance being the Wassermann reaction. The patient, a man of about 28, was gassed in France and was sent back to this country and placed under the care of the Public Health Service. He was admitted to the Pennsylvania Hospital ward with pneumonitis.

Early in February, 1920, he complained of soreness in his throat with increased shortness of breath and hoarseness and was sent over to the Out-Patient Department in the service of Dr. Coates, for examination and treatment and also to determine the possible relation between this throat condition and his being gassed in Europe. Examinations revealed one large, irregular ulceration at the base of his left arytenoid cartilage, covered with mucus, another round ulceration on the tip of the epiglottis on the left side, with considerable thickening. The vocal cords showed slight ulcerations and the rest of the larynx showed congestion and some edema.

It was felt that the patient was suffering from tuberculosis of the Larynx, judging from the appearance, and having in mind that a large

number of the men that have been gassed develop tuberculosis of the lung. This feeling was enhanced by the fact that a physical examination showed increased fremitus and rales at the apices, and the X-ray report of the chest read that there was mottling of the lung, and enlargement of the peribronchial glands, the radiographer being of the opinion that the patient showed tubercular manifestations. Sputum examinations, however, were negative for tuberculosis on three occasions.

There was nothing to do but to conclude that the case was a tubercular laryngitis, but for the sake of elimination, a Wassermann test was made, and this is where the reaction treacherously failed us, it came back negative. This, of course, we expected at the time and nothing but tuberculosis was thought of.

Local palliative treatment was administered and also several applications of pure phenol was applied to the ulcers, and two or three times they were cauterized with the electric cautery. No marked improvement was evident.

One afternoon, after an absence from the dispensary of about three days, the patient appeared with increased soreness in the throat. Examination showed little change in the ulcerations before mentioned, but a larger ulcer was seen in the throat, covering the left tonsil and extending over the left side of the pharynx to about the mid-line. Attention of Dr. Coates was called and he felt that this was not the way of tuberculosis and suggested to try some anti-syphilitic treatment.

Mixed treatment was not given on account of the supposed harmful action of iodides on tubercular foci, but instead, the patient was sent over to the hospital for a salvarsan injection, which was given. Three days afterwards a remarkable change was noticed, the ulcerations all dwindled down to about one-half their size. The patient was now sent over for a Wassermann test and this time the report was strongly positive, evidently the administration of salvarsan provoked this reaction. Three more doses of salvarsan were administered within two weeks and the ulcerations completely disappeared and so did the thickening of the tissues. The previous treatment extended over a period of about five or six weeks without any improvement. The patient felt better, his voice considerably stronger after the anti-syphilitic treatment.

There are two things that I learned from this case: First, that owing to the prognostic gravity of tuberculosis of the throat, it is justifiable to administer salvarsan in such a case even in the presence of a negative Wassermann, and it may sometimes, as in this case, show up the snake in the grass. Secondly, the X-ray diagnosis of tuberculosis in persons who have been gassed is unreliable and sometimes, as in this case, misleading. In speaking to a member of the Public Health service, I was informed that frequently radiographers make a diagnosis of tuberculosis, from the appearance of the plate, in persons suffering from pneumonitis due to gas poison; and while a large number of persons who were gassed do develop tuberculosis, their experience does not bear out that all who show such X-ray findings and even physical signs about the apices, suffer from tuberculosis.

DISCUSSION.

DR. GEORGE W. MACKENZIE (on Dr. Stout's paper): This case had a paralysis of the vocal cords. It is quite frequent to have one or both of the recurrent laryngeals involved. It was impossible to see the movement of the cords owing to great swelling of the arytenoids on that side. Even if there is voice, there may be a paralysis.

DR. ROBERT F. RIDPATH (on Dr. Herman B. Cohen's paper): I have had quite a number of antral conditions due to foreign bodies. I have lately operated on a case in which we had a tooth misplaced. According to the history, patient had been kicked by a horse. He had a swollen jaw but no fracture. But one year afterwards we noticed he had some stoppage in the right nostril, right nares practically occluded. I saw case three weeks ago and the main occlusion of the nares was due entirely to a tooth. The apex of the tooth was pointing towards the septum. The tooth was extracted through the antrum. The character of the discharge which Dr. Cohen has intimated in his paper, I would say was that of a chronic maxillary sinusitis. I cannot see how simply tak-

ing away of the tooth would cure the infection so quickly. A tooth with that much decay would set up more or less of a chronic sinusitis which would necessitate the removal of all of the mucous membrane and would have a discharge lasting a long time afterwards.

In regard to Dr. Skillern's paper, I would say that we have repeatedly done secondary operations on the antrum and frontals. The majority of the cases requiring secondary operations is due entirely to faulty technic in not cleaning out our sinuses as thoroughly as we should. The mucous membrane is not only diseased but frequently the bone becomes involved. We must, therefore, be very careful and thorough in our operations.

Dr. GEORGE W. MACKENZIE (on Dr. Wager's paper): Dr. Wagers spoke of empyema. Empyema is a condition where there is pus in a cavity. Pyema is pus in the blood and I think he meant pyemia. Pyemia is a condition which follows septicemia originally or the late effects of a thrombosed phlebitis.

Dr. WAGERS: Patient did have pus in the chest and therefore had empyema.

Dr. MACKENZIE: Then patient had both empyema and pyema as there was pus in the blood also.

Dr. GEORGE W. MACKENZIE (on Dr. Fisher's paper): Dr. Fisher's case reminds me of a case which I showed several years ago where patient had normal reactions to turning, canal being filled with polyps and did not permit caloric reactions. We cannot compare both sides in regard to perform. The world condemns the Heath operation. Dr. Fisher did not have time to write this case up in detail. He did not say just how much hearing there was. I always like to know why I am to operate before I do so. I like to know everything about the case, all the pathology, otherwise you do not know what kind of an operation you are going to perform. The world condemns the Heath operation. Dr. Fisher stopped operating because he had blood. No reason why he did not go on as it is easy to control. Simple pressure is enough. What condition of the labyrinth did this patient have to lose all hearing and the caloric reaction. He is correct in saying that there is an absolute loss of function and all the symptoms and signs of a dead labyrinth. It can be a case of serous labyrinthitis and hemorrhagic labyrinthitis. There is only one case reported. The only thing that will cause a dead labyrinth is labyrinth suppuration. Absence of temperature is generally seen. I have seen numerous cases where patient was well in two or three days.

The regular meeting of Philadelphia Laryngological Society was held on Monday, October 11th, at 8:15 p. m., Cadwalader Hall, College of Physicians.

CLINICAL NIGHT—PRESENTATION OF CASES.

Angiofibroma of Lateral Wall of Nose. Dr. HENRY A. LAESSLE.

This case is extremely interesting. It has appearance of a polyp when looking at it casually and when touching it with a probe, it bleeds readily. However, it is an angiofibroma and has been confirmed by pathological report. The history of the case is as follows: In 1918, the growth was first noticed. He had difficulty in breathing and consulted a physician who diagnosed it as a growth in the nose, and since then he has been going from one physician to another. The growth is now of two years' duration. The swelling has been increasing on the left side of the face and the patient is quite anemic, due to loss of blood. These cases are rare. Since removal of some of the growth by fulguration the breathing has improved.

Dr. Herman B. Cohen had two or three slides under the microscope of fibroangioma of the septum. History of the patient. This man, colored, 55 years of age, complained of obstructed breathing, November, 1919. Attacks of epistaxis and increasing nasal obstruction. There was a complete nasal stenosis of the right side which looked like a polyp, lobulated, etc. After cocaineization and treatment, I was able to get around it with a snare and found it attached to Kieselbach area. I then removed it with an ordinary snare and cauterized it. Relief was instantaneous. Report from laboratory was fibroangioma.

Post-Orbital Disturbance Causing Marked Exophthalmos. DR. ROBERT F. RIDPATH.

I made this examination expecting to find that the exophthalmos was due to the nasal condition. X-ray was negative. This history is as follows: Patient is five years of age. When nine months old the mother noticed a small swelling at inner canthus of the right eye and this swelling seemed to increase when the child contracted cold, during the first two years of its life. The swelling seemed to subside after the cold was better. However, since last March, after a severe cold which lasted longer than usual, the present condition persisted and is becoming worse. I have not had an examination of the eye made as I only saw the child the second time today. The first time was three days ago. There was no pain except the last two days. When the child goes to bed there has been a sharp lancinating pain lasting only a few minutes. The sight is only slightly impaired, he can count, read the alphabet. Since I saw the patient last, the eye has become more protruded. I had hoped to have the X-ray plates here tonight. It is negative, however, as far as the condition originating from the nose goes, according to Dr. Pfahler's report. It might be a mucocele originating from the nose and breaking through the ethmoid cells in the orbital cavity. I am hoping for your diagnosis and your remarks, after the case has been shown. The scar over the superorbital region was made at the Wills Eye Hospital in March, 1920.

Throat Complications of Hodgkin's Disease or Sarcoma. (For Differential Diagnosis.) DR. BENJAMIN D. SHUSTER.

This man is 40 years old, and since 6 months ago, following an acute mastoiditis, which subsided in a few days, he noticed some swelling on the right side of his neck. It gradually increased in size and application of ichthal ointment and other substances, usually used in glandular enlargement, failed to effect any change. At about three months it became painful and he noticed interference in swallowing. He went to various physicians and dispensaries for treatment. On two occasions an enlargement behind the posterior pillar on the same side was incised as a peritonsillar abscess, but without obtaining any pus. At this time glandular enlargement was noted by the patient, on the opposite side. He became weaker and weaker and lost about 15 pounds of weight within 4 months and was unable to follow his occupation. At present there is considerable swelling behind his left posterior pillar (the first side affected) causing dysphagia. There is also some swelling behind the tonsil on the opposite side. Two distinct and very large glands are present in the left axilla. A chain of enlarged glands is also palpable on each side of the neck from the large mass to the supra-clavicular space. He has had two radium treatments; following the first he thought he had relief, but unaffected by the second. When I first saw him I thought of Hodgkins disease because of the consecutive enlargement of the glands on both sides of his neck and in the axilla. Sarcoma usually does not give glandular enlargement in the neck unless the tonsil is primarily affected. In this case his neck seemed to have been affected first and the pharynx encroached upon later. Dr. Coates thought it a sarcomatosis from its appearance. We only saw him once and no detailed blood study was made, although the patient thought that in some hospital a blood test was made which they called negative, probably a Wasserman. The case being an interesting one, and this meeting being quite close, Dr. Coates suggested that I bring it up here in spite of our not having fully worked it out. At the same time we would like some of you gentlemen to express an opinion as to diagnosis.

Post-Auricular, Subperiosteal Abscess, Simulating Mastoid Disease, Complicating Contagious Diseases. DR. H. A. SCHATZ.

The following facts were observed by the writer during a short term of service as Oto-laryngologist to the Philadelphia Hospital for Contagious Diseases, during the busiest months of the current year:

That the number of cases of subperiosteal post-auricular abscess without mastoid involvement in scarlet fever was far greater than in non-contagious practice, particularly in cases of scarlet fever complicated by

measles. A review of 900 cases proves it nearly 1%. That the swelling, in the earlier stage at least, was usually over the upper part of the mastoid (supra-auricular) although it often spread downward later, covering the body of the mastoid process. That a certain percentage of these cases tended to point with spontaneous rupture through the cartilage in the roof of the external meatus. That simple incision over the mastoid with drainage cured three of the seven cases observed in from two to four weeks. Two other cases went home one and four weeks respectively, after incision, with sinuses still discharging. That the mastoid was found normal in two cases operated upon, and that in one case failure to clear out all the mastoid at the primary operation necessitated a secondary one about two months later when the mastoid was found necrotic and the lateral sinus exposed over a considerable area.

Luc brings out several important points in a table of differential diagnosis between abscess with mastoid and abscess without mastoid involvement. 1. He states that in the former condition the otorrhoea is abundant and persistent whereas in the latter it is slight and transitory, having generally stopped when the swelling appeared. In our cases the otorrhoea was usually quite marked. 2. Luc observes that in mastoid disease the swelling is retro-auricular, whereas in abscess without mastoid it is rather supra-auricular covering the greatest part of the temporal region and pointing inferiorly toward the upper wall of the meatus; the soft parts in this region being raised by infiltration.

Here again our observation differed in that the swelling spread rapidly downward over the greater portion of the mastoid process, simulating closely the appearance of mastoiditis.

3. The mastoid region is tender under pressure in mastoiditis, but generally little or not at all tender in abscess.

4. There is deep spontaneous pain with throbbing and sleeplessness in the former, little or no spontaneous pain and no sleeplessness in the latter condition.

5. More or less high fever with altered foci in the former, little or no fever, foci normal in the latter.

As regards treatment, Luc advises deep incision through the cartilage in the roof of the external meatus with drainage. In our cases it seemed more commonly indicated to incise over the mastoid, except those few cases that ruptured spontaneously into the external meatus.

(Luc—Transactions of First International Congress of Otolaryngology.)

Epithelioma of Tongue and Two Cases of Fistula Following Teeth Extraction With Chronic Maxillary Sinusitis. DR. HERMAN B. COHEN.

1. Epithelioma of Tongue. The cause is not certain. The patient was 61 years of age, robust, and in perfect health, until three months ago, when he noticed some pain in swallowing. Denies venereal infection. Wasserman is negative. He has worked for ten years in a steel mill. Has smoked a pipe all his life, clay pipe for thirty years. Twenty-five years ago had a left lower molar tooth extracted. He is married and has three children. There is no cancer history in family. He is otherwise well. He now presents an ulcerated and indurated area in anterior two-thirds of tongue. Has occasional dull pain in left ear and left parotid. A few glands on either side are palpable. He should undergo block dissection previous to X-ray treatment.

2. Two cases of fistula following teeth extraction with chronic maxillary sinusitis. The question is how to close these fistulae? They are both on the left side, following teeth extraction. Both had chronic maxillary sinusitis. First one, Mrs. A. M., has had several teeth pulled, after which pus discharged through the alveolus, but the discharge is practically nil at present. Has been cauterized and curetted but fistula is still open. The second case, J. P., age 48, similar history of old chronic maxillary sinusitis. He has had second premolar tooth extracted from which date discharge followed. He has had a left hyperplastic ethmoiditis. I hope you will suggest the closure of these fistulas.

Bone Transplant (Tibia) for Nasal Deformity. DR. N. P. STAUFFER.

This young man came to me three or four months ago saying that he did not like his nose and wanted a bone transplantation made. He ap-

parently had no nasal process at all from the X-ray. He has a septal perforation which he had before. He has never had a submucous resection done and the Wasserman was negative. The tibia was cut out, a slit was made across the eyebrow, and the bone slipped in. Bone put in nose was $1\frac{1}{2}$ inches long. I do not like rib resection as patient is sick much longer. The tibia is much safer.

DISCUSSION.

Dr. Herman Cohen.

Dr. FREDERICK STRAUSS: Has a submucous been done?

Dr. M. S. EBSNER: In fistula of the antra I have always made it a point to determine definitely whether there is any disease present in the antra. Antra free of pus does not mean that there is no disease for a pyogenic membrane may be present and act as a chronic irritant and thus prevent the closure of the fistula. Therefore, the most important thing is to clean the antra thoroughly as X-ray in these conditions are of no avail. In my experience with fistula, I had under my observation three such cases. In one a Cooper operation was performed. The other two fistula resulted from teeth extraction. These fistula continued for months and they did not clear up until a thorough antrum operation was performed and all of the pyogenic membrane removed. The operation employed in two of these cases was the Skillern preturbinal and the other the Danker.

Dr. HERMAN COHEN (in closing): In answer to Dr. Strauss' question, there was a submucous resection performed on Mrs. A. M. in April. She has practically no discharge at all from the antrum. However, she has a fistula. Do all sinuses close after antrum operation? I think some remain open. I would like to ask Dr. Skillern. In the other case, nothing has been done to the antrum. He has, however, had a fistula for 15 to 20 years. What is the method of closing these fistulas? I would like to ask if the diagnosis of epithelioma of the tongue is correct. There is little literature of T. B. of the tongue. What should be done if it is?

Dr. R. H. SKILLERN: The pathological condition depends very largely on what we are going to do with these fistulas. If we have a pathological condition, there is nothing that will close it up until we get rid of that discharge. The question is just exactly what to do to stop that discharge. It depends very largely on the nature of the case. Cleaning out the polype in some cases, the fistula will clear up. If food gets up and irritates it, it is just as well to let it alone. Closing a fistula is simply a matter of getting enough tissue from where there is no tension, taking part of the alveolus. The treatment depends entirely on the pathological condition found.

DISCUSSION.

Dr. R. F. Ridpath's Case.

Dr. G. W. MACKENZIE: Dr. Ridpath should get back of the eyeball and try to find out what is there. It might possibly be a mucocele of the frontal sinus or may be a tumor formation. Go after it radically and see what is behind the orbit, that is pushing the eyeball forward.

Dr. RIDPATH: I have only seen one case similar to this. The patient was at St. Agnes Hospital, adult about 30 years of age. She had had, as in this case, an operation before she came to me. I diagnosed the case as a mucocele of the frontal sinus and did a radical Killian and the case recovered. The eye gradually went back into its socket, there was no change of vision or exophthalmos. The frontal does not start to develop until later in life which eliminates in my mind, mucocele of the frontal in this case. There is a possibility of mucocele originating in the ethmoids. I agree with Dr. Mackenzie that something radical must be done immediately, if we are going to save the eye at all.

DISCUSSION.

Dr. Schatz's Case.

Dr. FRANK EMBERY: In my experience with mastoids I have seen only one case that was not mastoid infection.

Dr. N. P. STAUFFER: I recall one of my cases which I lost. I was called in consultation with another man who said the patient had a subperiosteal

abscess. I said to operate immediately. A third doctor was called and he said patient need not be operated on. I was discharged. Subsequently he did get well without it. He had a mastoiditis, but it discharged externally without any further operative measure. I would not advocate such surgery. The great difficulty is in not taking the familiar mastoid which is bulging, as a great many patients are better off operated on and would get well without a great deal of complications.

DR. M. S. ERSNER: I would like to ask Dr. Schatz whether any bacteriological study was made. Last year we had a great many otitis media cases with post auricular glandular involvement and the X-rays taken were negative as to mastoid involvement. Among these cases nine developed retro-pharyngeal abscesses. During that period the temperature continued and the postauricular edema did not subside until the pus was evacuated through the oro-pharynx. Speaking about post-auricular abscesses complicating contagious diseases reminds me of a patient which I had following chicken pox. The family physician thought this condition to be a post-auricular abscess and he made a wild incision with the hope of evacuating the pus, but as time went on, the child became worse and the typical toxic temperature ranging between 97 and 104°. I was unable to place the child in any hospital as there was no room to accommodate her at the Municipal or at the Philadelphia General Hospitals and was therefore compelled to do the mastoid operation on the kitchen table in patient's home. It was surprising to note the extensive involvement. The lesson to be drawn in this case is to be very cautious not to operate unnecessarily and at the same time not to overlook true mastoiditis when present.

DR. G. W. MACKENZIE: My own boy developed retro-auricular swelling which looked like the text-book pictures of mastoid abscess. Of course, I had the history of this case to work on. He had had a boil on the posterior wall of the canal. The boil became infected again and subsequently pus. About the same time, I had a case similar to this—a child 2 years of age. I suspected mastoid. The child had had earache a few days before and father had put Omega oil and pepper into canal, which relieved the pain but caused swelling, and which, upon incising, I evacuated 2 teaspoonsful of pus. The only thing I cannot grasp is how a patient can have a middle ear discharge with a subperiosteal abscess and the mastoid escape. You can get a double condition where patient may have a middle ear condition with complicated boils in external canal and boils causing circumscribed auricular swelling. We can get a middle ear discharge with no mastoid involvement but external canal condition causing retro-auricular lymphoid swelling. I saw a case where a man had discharge from ear which was watched for a few days and eventually had small area of localized cellulitis in posterior canal wall which cleared up in a few days. The condition returned later and when the mastoid was operated upon, he had extensive mastoid involvement.

We do not frequently see the leucocyte count showing any difference. Only one of these cases has been diagnosed as a furuncle at its first inspection. Make deep incision in roof of external meatus. It is not good surgery to wait in these cases as it can do harm. As to bacteriology, I cannot answer, one man claiming to have found pneumococci and Glut has found streptococci. When it is of glandular origin. These abscesses originate in upper part and higher up.

DR. MACKENZIE (on Dr. Stauffer's case): Is this a preliminary operation to another one?

DR. STAUFFER: I thought it would be enough.

DR. STRAUSS (on Dr. Schuster's case): I believe it is a sarcoma.

The regular meeting of the Philadelphia Laryngological Society was held on Tuesday, November 2nd, 1920, Cadwalader Hall, College of Physicians, 22nd and Ludlow streets, at 8:15 p. m.

The Modern Conception of Deafness, and Its Treatment. DR. HAROLD HAYES.

DISCUSSION was opened by DR. S. MACCUEEN SMITH. Dr Hayes seemed to impress upon us all the necessity of arriving at a proper diagnosis. Not so many years ago, when otology was in its infancy, there were two

classes of cases, one was wax and the other no wax—wax curable—no wax, not curable. A thorough examination of the upper respiratory tract is necessary. It is impossible for one to expect to relieve a case of deafness, particularly the progressive type, without first having a free nasal respiration; it is absolutely necessary, without it we cannot have the proper ventilation of the ear. This brings up the point of the operations which Dr. Hays has discussed. If you have this free respiration, for example, a moderately deviated septum, if that septum is to be corrected for some other purpose than restoring hearing. I have seen cases where the patient had almost nothing in the nose, and operations done to relieve deafness which should not have been done. I had much of the same experience as Dr. Hays. In one patient I found a large growth in the posterior end of the inferior turbinate which was removed and the patient was relieved. I wish to repeat the importance of determining which part of the hearing is at fault. In doing this it is necessary to put the patient through various tests. Many times growths or degenerations of the turbinate body are overlooked. There is one important condition which Dr. Hays omitted and that is the exudate remaining in the middle ear following acute suppurative otitis media or acute catarrhal otitis media. It is most important to treat the patient after the acute symptoms subside or otherwise organization takes place, and the hearing becomes impaired, especially in later life. This is particularly true in children. I was very much interested in Dr. Hays' experience with cantharides collodion. Dr. Hays keeps this up until he gets a distinct myringitis. His idea is to produce a definite irritant. Twenty-five years ago otolaryngologists used to use flexible collodion for the same purpose, the idea being that it would make the drum more tense. I have also used it many times myself. The psychology of these patients who are hard of hearing is difficult to handle. We cannot be considered as doing anything wrong in encouraging them. The suffering must be intense, particularly in bad cases of tinnitus. Some cases often go as far as to commit suicide. If you can give them encouragement, it is a great benefit to them. You can present a new life to them and make them see things differently. The relief that is obtained in breaking up adhesions, particularly in Rosenmüller fossae, I have been doing for a few years and I can commend it. In removing tonsils in children, it is my practice to break up adhesions and to dilate the posterior nares. The matter of diseased teeth is important. Lots of cases of otalgia are caused by diseased teeth. The diseased tooth does not have to be a tooth on that side, and which, if corrected, will relieve the trouble in the ear. It has been my practice in the past in making a complete examination of a patient who complains of some abnormality of his ears. It is quite reasonable to assume that in cases of hypertrophic rhinitis you will have that same process taking place in the ear, and in atrophic rhinitis cases, the atrophic changes taking place in the ear. Oto-sclerosis—I quite agree with Dr. Hays that it is difficult to determine; in fact, almost impossible. However, there are some characteristics which would make us reasonably sure. For instance, a case of rapid loss of hearing with practically normal middle ear and Eustachian tube, rather inclines one to look at it as a case of oto-sclerosis. These cases are very rare. It must be a case which has practically no pathology as far as we are able to see. It was my pleasure, while abroad, to see some cases of oto-sclerosis. We found on the labyrinth capsule several little dots of osteitis. I would like to ask Dr. Hays in closing his discussion what to attribute the deafness that we find so frequently in pregnant women, more particularly in the first pregnancy. I have given this matter quite a lot of thought and have treated these cases. I remember in one instance a young married woman, having deafness with each child. The only thing we could do to relieve her was to send her to a fairly high altitude. In syphilis, if we do not have a positive Wassermann (most important thing to determine the presence of syphilis) by blood examination, we certainly find it sometimes in examination of the spinal fluid. In one case, three different reports came back negative, examined by three different men, another man reported a 3 positive. In regard to diseased tonsils, I agree with Dr. Emerson and Dr. Hays,

who feel that diseased tonsils are positive factors for diseased ear conditions. They should be removed. UNWISE INFLATION. Inflating an ear, presenting atrophic changes, must be treated cautiously as inflation will be detrimental. A tube whose calibre is abnormal, it is a very simple thing cause a concussion of the labyrinth. I have seen many who have little noise in ears consult someone (not aurist), who uses much force causing a concussion from which they never recover. SYSTEMIC AILMENTS AS A FACTOR IN CAUSING EAR DISEASES. In studying a case it is important to determine definitely whether we are dealing with a purely local condition or is the aural condition secondary to some systemic ailment. One must therefore be on guard to eliminate intestinal intoxication, high blood pressure, low blood pressure and the various anemias. I would like to ask Dr. Hays in his experience what effect has the high or the low blood pressure on these cases, particularly in tinnitus and oto-sclerosis? Re-education of the deaf and progressive type of deafness, Dr. Hays has spoken of: We have so many who not only seek relief but few whom we do not hope to accomplish much with. This type of case needs re-education. Re-education does not mean to go to some place for a few hours or a few weeks and expect to be re-educated. These people must be told it is a matter of re-education and a matter of weeks or months or sometimes few years before they become proficient. They must always attend these classes. Tell them that it takes time. From an economic point of view, these people can be made useful citizens.

DR. SETH A. BRUMM: I would like to ask Dr. Hays about the atrophic form. What was the medication used? In specific cases, if the patient showed a positive Wassermann, what were the specific manifestations of the ear apparatus that would interfere with deafness? No local signs of specific infection made from ear standpoint entirely.

DR. JAMES A. BABBITT: On the subject of the anxiety of this deafness, whether and to what extent any effort has been made to eliminate the conditions which are attributed to cause deafness, such as the banging of street cars, etc., night work. Increasing efficiency of children largely is determined in the removal of T. & A. I should like to know whether or not there is a definite effort to eliminate the conditions which are attributed, entirely outside of the naso-pharyngeal cavity.

DR. GEORGE M. COATES: I think this paper of Dr. Hays is the most common sense paper I have heard in a long time. It brings the whole subject to us in a very concise way. There is no question that the source of the trouble in our progressive deaf cases is in a great majority in the nose and throat, naso-pharynx particularly. The middle ear is not at fault in these cases but the tube back of that. I have had some experience in inflating the tube or middle ear and in dilating the tube. Pure inflation of the middle ear may relieve the condition temporarily. Treatment and dilation go a long way, but we have to get to the source of the oto-sclerosis. In past years, we have had very much less ear trouble coming in our free ear clinics, due to the wholesale removal of tonsils and adenoids. If this is true, it should also hold true that it will diminish progressive ear deafness cases that would have come to us otherwise. I have felt very strongly that the diseased tonsil is responsible for a great many of these cases, but we must look into every other possible source of infection.

DR. GEORGE W. MACKENZIE: Any paper that makes us think is certainly valuable. I quite agree with practically all that has been said. I was interested in the pathology and in the diagnosis and by means of which we are to arrive at the diagnosis. The tonsil has been referred to as a cause of deafness, but it was not stated what form of deafness has been caused by the tonsils. Before we can treat anything, we must know what we are treating. We have definite means of testing out the function of hearing apparatus, whether the trouble is in the middle ear, etc., means of determining whether the condition is in the labyrinth or in the nerve. The importance of testing out function in determining location of the lesion came to my mind when a trained nurse was referred to me by a general doctor with a history of deafness of two and one-half years' standing. She had been receiving inflation and practically nothing

else, except perhaps massage. She was evidently treated for a middle ear condition. Functional hearing tests showed absolutely nerve deafness. While examining patient, I was able to see that she had a hazy cornea suggesting syphilis and immediately discovered Hutchinson's teeth. Those are pure cases of syphilitic neuritis. Patient was put upon anti-syphilis treatment, but her hearing was not improved. Tonsils can cause deafness, but what form of deafness does it cause—nerve deafness, obstructed or middle ear or tubo-tympanic? When one makes a test of hearing and discovers an involvement of the eighth nerve, he must next determine whether it is a case of neuritis of the eighth nerve or cranial nerve alone, or whether it is due to pressure of the auditory nerve, etc. He finally comes to the conclusion that it is a neuritis. Next he determines what form of neuritis it is from an etiological standpoint. Acute infectious type. Next to the chronic infection, syphilis, tuberculosis and leukemia, toxemias (lead alcohol, quinine, wood alcohol, etc.) last to the so-called toxemias produced by something in the body. When one speaks of tonsils causing deafness of progressive type, I would like to say a word about the mobility of the membrane. It is important. When patient comes in for treatment of deafness, you examine him carefully and probably come to the conclusion that the location of infection is in the tube. If you inflate that patient, he may say he feels it or not. If you inflate and the tympanic membrane comes out and stays out it would indicate that the air is going in there in less column. Determine what it is for. Quality of the membrane. Finally mobility. If we find that the membrane moves like a piece of tissue paper, it would suggest that the tube is occluded. Follow the procedure, sound the tube, determine whether, if any, there are adhesions. You may find the organic stricture is in the isthmus. A word about oto-sclerosis. Politzer showed that these little islands located in different parts of the labyrinth seem to be located in the bone about the nerve. The diagnosis is hard to make.

DR. HAROLD HAYS (in closing): A great many points have been brought out here which I think will be worth while going over. Dr. MacCuen Smith spoke of what actually causes deafness. I did not want to take up in this paper the varieties of the causes of deafness which is perhaps more important. It is important to take care of children's ears; we should be careful of all conditions of the ears in children. Carelessness in this causes deafness in later years. After the acute process is over, try to sound out child's hearing at a time when the hearing can be brought back to normal. There are cases where there is actual suppuration which have their starting point of progressive deafness at this time. Children can be politized very easily without doing any harm and can be brought back to normal. The question of the ventilation of the Eustachian tube being interfered with by abnormal obstruction in the nose. About ten years ago I was happy enough to bring out an instrument called the pharyngoscope.

Relations of various abnormalities in the nose and throat to deafness and tinnitus. Almost all cases are found to have abnormalities. If we have a deviated septum, etc., we cannot say that operation will effect a cure. It is not a question of the amount of deflection or obstruction you have in the nose, provided there is proper ventilation to the Eustachian tubes and also the sinuses. Other infections of the throat.

Application of cantharides collodion. At the time that Heath wrote his paper, I had a number of solutions of cantharides made up in different strengths with potassium hydroxide and glycerine. After a short time, I discarded every solution but cantharides collodion. Squibbs is the best. It sets up a subacute inflammatory process which, when it dissolves, will tighten that drum. Daily applications until you set up an actual subacute inflammation. It will do no harm if we use just one precaution, see that applicator has not an excess of solution so that some of it does not drop down, lodge there and eat its way through the drum. It has sometimes totally destroyed the drum through physician's own carelessness.

My opinion of the deafness of pregnancy is that it is a toxic process. It is unfortunate, and we should keep the nose and throat in good shape,

Eustachian tube open and sometimes mildly inflating ears may improve the patient. The middle ear is not at fault, it is the toxemia.

Effect of high and low blood pressure and its influence on tinnitus. Intra cranial, extra cranial or aural. When patient complains of pulsation in heart I am anxious to inquire into his blood pressure. It sometimes makes quite a difference in tinnitus. Sometimes it is due to anemia, or excessive blood pressure. I do not think it is a thing you can explain in general.

Dr. Brumm asked me about the treatment of atrophic types of ear conditions. I think those are the most difficult cases that we come up against. Those cases are practically hopeless, unless we get up some practical etiology. I use a 4% emulsion of scarlet red. Parke-Davis' is the best. Application of that beyond Eustachian tubes may do some good. Specific manifestations—there are two classes—1. Get your internal ear manifestation as a result of syphilis which must be definitely diagnosed. 2. Patients that come to you with certain grades of progressive deafness which may be due to internal or middle ear derangement. If in those cases we get a positive Wassermann, it is likely to do a great deal more good than inflation.

What has been done for the external conditions causing deafness, such as noises in the streets, etc., and whether anything has been done to eliminate them. How far you can go to eliminate certain factors that cause them or whether they are sufficient, I do not know. Certain people have hyperacute ears. Anything that would cause great pressure would cause deafness. I am one of those. The type that will vibrate when a stenographer uses a typewriter too near. Hearing can easily be destroyed unless great care is taken.

Dr. Coates spoke about inflation. Inflation does more harm in the long run in our progressive cases than good. Inflation should not be attempted unless a good view of the naso-pharynx has been seen.

Dr. MacKenzie asked what trouble tonsils caused whether local or general. Tonsils either cause infection or irritation of the Eustachian tubes or deafness or focal or systemic infection. Small, submerged tonsils cause more trouble sometimes. There are three classes of cases. 1. Absolutely rigid drum which is retracted. 2. Drum which is relaxed. 3. Drum which is relaxed and at the same time is rigid.

Wonderful work has been done by the American League for the hard of hearing. This is a social and economic problem which affects thousands of people. The deaf person is usually a pessimistic individual, introspective. They are very often thrown out of a job. This League brings them together and finds employment for most of them. It started with about ten or twelve members, now it has over 700 members. There were 280 applications for employment, 240 were placed. They got good normal wages. There are classes in lip reading in schools, and free classes at night also. Lectures have been given in the Museum of Art where the room has been very crowded. It is the same kind of work that Miss Kinzie and Miss Steel are doing in this city. The only way for anybody to appreciate the problem of the deaf is to come in contact with them outside. Treat them psychologically, mentally and re-educate them, and give them encouragement.

Dr. ROSS H. SKILLERN: I have been intensely absorbed in that paper. What must the others have been! I make a motion that a vote of thanks be extended to Dr. Hays.

The meeting of the Philadelphia Laryngological Society was held on Tuesday, May 11th, 1920, at 9 o'clock, Thomas Hall, College of Physicians.

Dr. MATTHEW S. ERSNER (presentation of a case).

Mrs. B. H., 38 years old. Family history negative as to tuberculosis—malignancy and Wassermann negative. She was married when sixteen years old and year following marriage caught cold and became hoarse. Nose and throat examination—hypertrophic rhinitis and granular pharyngitis. Present symptoms—constant hoarseness and dyspnoea

upon exertion. The expiratory sound is of a peculiar brassy resonance and laryngeal examination shows epiglottis broad and somewhat curved in the center. The arytenoids are thin, leaf-like in shape and on phonation resemble the movements of the elephant's ears and the right arytenoid completely overlaps the left. The ventricular bands are hypertrophied, making it difficult to observe the true vocal cords. The only part of the vocal cords noticeable is the left anterior portion. Patient feels well and weighs about 165 pounds.

DR. GEORGE W. MACKENZIE (presentation of patient).

This young man first reported to me about two weeks ago making an engagement for an operation which was done four or five days ago. The history was: In October of last year he had a submucous resection performed with apparently good results. About four or six weeks ago had a collision with his bicycle and struck against a curb stone. The result was that his nose became disfigured and distinctly saddle shaped. I found that the nasal bones where they articulate with the nasal process of the maxilla had slipped about 2 or 3 millimeters, making the nose also quite flat and thrown to one side. Having had similar cases, I have done what most men would argue against, that is, to do a very extensive submucous resection. The cartilage that most people believe is a support to the bridge of the nose is not a support. I do believe that when one gets an injury to the nose and the nose is depressed, the cartilage serves to weigh it down and when we get rid of all of it the nose will come down. I removed the cartilage freely and immediately the nose came straight. Following this I introduced a very small rubber covered chisel, raising the bridge of the nose and thus replacing the nasal bones. One side is a perfectly smooth surface. He had a little depression before injury and the nose was turned up. The septum operation alone straightened the nose, but in taking out all of the cartilage the nose is practically the same shape as it was before. It is a simple operation done with cocaine.

Death Following Operation for Fistula of Esophagus (Reported by Dr. Skillern). DR. ROBERT F. RIDPATH.

It is always a painful moment when one has to report his failures and mistakes. I assisted Dr. Ridpath in this case. Patient was a woman about 40 or 45 years of age, big, strong and healthy, who had a fistula in the esophagus which seemed to be about the level of the thyroid cartilage. The fistula was suppurating and upon gagging she would bring up a quantity of pus. She was admitted to the hospital for operation. Dr. Ridpath used the long power cutting forceps. We put in the bougie and started to cut down anteriorly. When the bougie was inserted about 1 or 1½ inches, there was a sudden gush of blood which was the most terrific I have ever seen. We attempted to check the blood with a hemostat, but failed and the hemorrhage continued. In the meantime the electric lights went out. We realized that unless the bleeding was controlled very soon the result would be disastrous. Dr. Ridpath finally controlled the hemorrhage by wrapping his finger with gauze and inserting it into the opening, using pressure at the same time. The house surgeon was sent for who attempted to stop that hemorrhage by packing gauze in the throat. I urged him to ligate the carotid artery but he said wait a minute. In the meantime, patient died right on the table. Where was the mistake? We did not go ahead and do that ligation ourselves but depended on someone else to do it for us. The patient should have been alive today. Autopsy was not obtainable and we do not know what had happened.

Death Following Double Killian Operation on Frontal Sinuses. DR. ROSS HALL SKILLERN.

A man about 50 years of age came under my observation with a fistula on the right frontal sinus, discharging pus. He had already been operated upon intranasally, the ethmoids and sphenoids having been cleaned out. On the left side he had no operation. His condition was so bad

that he wanted to plug up the nose with cotton to prevent pus from running out. We started our operation on the right side, taking about an hour or so to clean that side up. I then found that the frontal sinus septum had a large deflection filled with granulation tissue so I cleaned that out and found pus. We then continued the operation, making an incision across the nose and to the other side. The left frontal was quite as large as the right. We cleaned that out and also the ethmoids and sphenoid which were involved. The patient stood the operation very well. It lasted about 3¼ hours. We used ordinary drainage and closed the incision with silk worm gut. The next day he felt fine. The following day, 48 hours afterwards, he became confused in his speech, forgetting the last word of the sentence when repeated. He could never tell me what he wanted. There was some trouble apparently in the speech center. He got a little better in the afternoon, but had a restless night and next morning passed into unconsciousness, temperature rising to 107°, and before I got to the hospital he died, being the third day after operation. Autopsy was obtained. We found the whole brain thoroughly congested and various germs in the fluid. We searched as thoroughly as we could, with the aid of a pathologist, hoping to find some error in our technic, but we could find no portion where there might be any local infection. There was intense congestion of bone and acute meningitis. Cultures from the nose revealed the same germs as those found in the spinal fluid. But how did he get this infection? I had another case like this. Both occurred in old chronic cases; one had it for twenty years, the other twenty-two years. The only explanation I can give is that in these cases the body builds up a resistance and the patient is able to go on with this severe infection by reason of this resistance. As soon as we operate, in some way this resistance is broken down. I hope to be able to find the cause of death following operation in this particular type of case.

Complication Following Needle Puncture of Maxillary Sinus... DR. FREDERICK STROUSE.

A patient presented herself at the Medico-Chirurgical Hospital, when I was in Dr. Skillern's service, for examination of the nose. We wished to eliminate the maxillary sinus and used needle puncture. In introducing the needle I momentarily hesitated doubting whether I had penetrated the lateral nasal wall. After hesitating I pushed the needle forward, I felt the bone give way and being satisfied that I had entered the maxillary sinus, I injected normal saline solution. The picture that presented itself immediately was terrible. The surrounding tissue became enormously swollen. I had entered the orbit and had injected saline solution into it. The patient was absolutely spellbound. She knew something dreadful had occurred. I immediately applied hot applications over the eye. In the course of two weeks everything turned out entirely satisfactory. There was no pus in the maxillary sinus. I felt so sure that I was in the sinus that I disregarded the first rule in sinus operation and that is to introduce air into the sinus. If you are in doubt whether you are in the maxillary sinus withdraw your needle always and make another attempt. Then force air into the sinus.

I would like to relate another mishap. I recall a case in which I performed a needle puncture at the Medico-Chirurgical Hospital. It was easy to enter the sinus and in endeavoring to press air into it, I met with an obstruction. I withdrew the needle immediately. Before using needle be sure that the needle is patchless. Someone else evidently had used the needle and had discarded it without cleaning it.

A short time ago Dr. Olsho referred a patient to me during his absence. In this case I had evidently gone too far back and it required some resistance to penetrate into the sinus. I endeavored to press air into the sinus but did not succeed. I looked for a stylet but did not have one. I tried to force a small applicator through needle but applicator was too large. So I had to withdraw my needle. These things can all be avoided.

Post-Operative Mastoid Hemorrhage. DR. MATTHEW S. ERSNER.

This patient presented a typical mastoid. I operated on the mastoid in the usual manner. We always depend on our blood clot and very seldom ligate the post-auricular artery to control hemorrhage. This patient was a girl 9 years old. I cleaned out the mastoid in the usual manner, the only trouble being that the lateral sinus came too forward to be convenient to enter the antrum. Everything went all right for four days. The fifth day the temperature jumped to 104°. When I examined her at this time I did not find anything unusual. About 12 o'clock that day I was called to the hospital in a hurry. I found that the dressings were saturated with blood, the child was pale and the tissues of the scalp become swollen and the tissues of the left side and neck and chest became edematous and distinctly pitted on pressure. I removed bandages and found a spurting blood vessel which had to be controlled with hemostats. The swelling continued for four days and came down two days afterwards. She made an uneventful recovery. The organism found was streptococcus hemolyticus.

Untoward Results Following Operations on the Ear and Mastoid. DR. GEORGE M. COATES.

The case I have to present appeared to be as being of considerable interest and was unique in my experience. It happened two years ago, April, 1918. The patient was the wife of a private soldier at Camp Hancock in the 28th Division. She came to the Base Hospital complaining of earache and was seen by my assistant, Dr. Doyle. She had earache in both ears and some temperature, so both ear drums were incised. Earache continued, so ear drums were incised again. She began to run a little temperature and I think the ear drums were incised for the third time. Hearing was getting rather bad. Then I first saw her. She was 24 years of age. Came to the Base Hospital April 20, 1918, with history as above. She stated that the ear trouble came on from a rhinitis which she contracted in one of the swimming pools in Augusta. On April 25, five days after she first came in, she began to have mastoid tenderness; right canal somewhat obstructed. Next three or four days went along getting gradually worse, sleeping badly, nervous, excitable and temperature 102°. Doubtful history of chill at this time. She was transferred to the ward at the Base Hospital. Her leucocyte count was 12,200 and the X-ray report showed both mastoids hazy but the right mastoid most involved. On May 9, the left mastoid having considerably cleared up, the discharge growing less and her drum becoming more normal, a simple mastoid operation was done on the right side by myself. The mastoid was found considerably involved, with some destruction of the cell walls. Necrosis of cells was quite well marked. Her sinus was placed very high and far forward approaching the antrum wall, making the antrum difficult to approach. Going into antrum the sinus was exposed and seemed to be all right. Everything else was normal. Dressed with modified blood clot dressing which consists in placing a soft rubber cigarette drain in the antrum to the opening of the auditus and allowing the wound to fill with blood, when it is closed. On May 10, the following day, she had a temperature of 101°, hearing was bad, had no vertigo, no nystagmus and no chills or delirium. The bacteriological report was streptococcus hemolyticus in pure culture. May 12, three days afterward, temperature was 106° rectal, leucocyte count 22,000, eyes normal, lungs normal, pelvic organs normal. The mastoid showed no evidence of trouble, blood clot not infected. Very slight discharge. May 13; temperature 106.8°, 5 a. m., not lower than 104° all day. Had some chilly sensations. Wound healed perfectly. She had rather a whitish, pasty appearance. Dressing removed this day and everything seemed all right. May 14, cigarette drain was taken out, five days after operation and immediately after the ear had ceased discharging. The skin incision was practically healed. The cigarette drain was lifted out and as I did so a trickling of bluish blood followed which made me suspicious. In two seconds

the trickling became a gush. I reached across for iodoform gauze, stripped the wound open, and cleaned out the blood clot. There was a very free gush of bluish blood. We could not do any classical packing but we did the best we could. The packing was removed seven days later without any return of hemorrhage. Two days later the blood culture showed a streptococcus hemolyticus septicemia; the right jugular was ligated and incised up to the facial vein. Meanwhile, the temperature had come down to normal, the wound in the neck healing immediately. On May 25, nine days later, temperature was between 102° and 105°, both middle ears dry, hearing 20/20. Metastatic abscess of gluteal region diagnosed and drained and we had no further trouble with the case after that. Everything turned out all right. The question has always been in my mind as to what caused the rupture of that sinus. There was no clot in that sinus itself or in the jugular as there was free bleeding when I excised it. The clot was evidently in the jugular bulb. I suppose what happened was that the cigarette drain lying for five days against the sinus wall induced necrosis. The drain was not adherent and you would naturally think that there was not pressure enough for the drain to cause it. The bad point about this case is the time it took us to make the diagnosis of lateral sinus thrombosis. We probably should have gone in earlier. It is better to ligate the jugular and get it early. We did let it go for some time and waited to get positive blood cultures. Fortunately we were in time but it was certainly an error in judgment to wait so long. We should have cleaned out the sinus at the first operation. I had never seen a case of spontaneous rupture of the sinus before, but did see a report of one other case in the literature of 1918.

An Emboli Following Infiltration Anesthesia of the Septum. DR. GEORGE W. MACKENZIE.

I will mention a few cases. During my post-graduate work I remember an assistant by the name of Bundy who attempted with a Killian hook puncture needle to go into the maxillary sinus by way of the natural ostium. This is a thing we should not do. He started to force air in and in a very few seconds the patient shot his arms out and became unconscious. What had happened is hard to say. The man was unconscious and died the following day. Second case—had a septum to operate and put bone into the septum that another assistant was removing from the septum of another patient. I noticed that the plistine would drop of its own weight. This is a dangerous thing in a syringe but it slipped me. The patient shot his arms out, developed vertigo, and also diversion squint. The assistants said the patient was hysterical. He was put on a couch and six or eight hours later came to normal condition again. Third case—got air into syringe while preparing patient for septum operation. Patient developed slight vertigo and had a white tree formation on side of face following the course of the blood vessels. When air enters the circulation, all the lines of the facial arteries are distinctly seen. Vertigo and diversion squint lasted for an hour and the tree formation remained until the next morning. Next case—an assistant was doing a needle puncture on the maxillary sinus. I was in another room when I was called out. The patient was lying on the floor, rather cyanotic, pulseless and very shallow breathing. We used strychnin and artificial respiration. After 15 or 20 minutes patient showed some life. We told patient that he had fainted. Next case was a man who was not a good subject or good risk. He was very nervous. We were preparing to make a puncture of the right maxillary sinus when the patient fainted and there was complete collapse, but no loss of consciousness and he came around eventually. He went to Chicago and I gave him a letter to another doctor. He was operated on the frontal sinus and three or four days later died, but not in my hands, however. The risk of using air is a safer risk than using water.

DISCUSSION.

DR. GEORGE W. MACKENZIE: Whenever the symptoms and signs point toward a disease when you come to operate nine times out of ten that

disease is present. It is safer to go ahead and operate than to let it go. The patient never dies because too much is done but because partial work is done. In case of doubt, operate, and if you operate, operate thoroughly. I have come to regard blood clot dressings as an unsafe measure. It is not a safe procedure. Whenever you operate do not be afraid to expose the sinus. Study it, expose it freely. Always leave a good, free opening and do not sew it up. The first principle of surgery is to give drainage, not only to release pressure but to let air or oxygen in it. Sinus thrombosis is not an easy thing to diagnose. Two papers on sinus thrombosis were read in New Orleans at the last A. M. A. meeting. There are many good reasons for it for the symptoms are very variable. Some get symptoms of a sinus thrombosis without getting sinus involvement. There are various types. There are lots of patients with sinus thrombosis who recover without operation.

DR. GEORGE M. COATES: I told Dr. Ersner to bring this case down here for consultation. All I can see is some hypertrophy of the ventricular bands but there is something underlying I think.

DR. HERMAN COHEN: I had occasion to see the same patient about two weeks ago. I agree with Dr. Coates, but I thought that I made out in the anterior half of the right cord a growth of some kind. I told her I thought the condition was in an active stage and that I would probably have to operate later on. I came across a case similar to that of Dr. Ersner's post-operative hemorrhage following mastoid operation. After five days I was called hurriedly. Patient's temperature was normal and I had instructed to have patient sit up that morning for a short while. When I came down I found patient's temperature had jumped to 103° and found that the bandage had been saturated with blood. I took it off and redressed patient. Temperature came down. This was not a blood clot operation.

DR. G. M. MARSHALL: I have seen several cases of overlapping of the arytenoids but I think these are rather rare. I think there is enough congestion and also failure of approximation to cause it.

DR. G. M. MARSHALL: In connection with Dr. Mackenzie's advice to leave drainage. After having such a gush of blood we will have tremendous bleeding and patient is likely to die on table. Dr. Coates had no drainage in his case. I do not see how you can drain it.

DR. EDWARD W. COLLINS: I was rather interested in Dr. Mackenzie's report of effects of air embolism. I have injected lots of air into veins in giving pneumonia serum and intravenous injections without any untoward symptoms. I saw the subclavian vein cut and sucking air into the circulation without any bad effects. In injecting the nose the arterial supply is an end supply and there are no big vessels to carry air to the brain. In order that air may get to the frontal areas of the brain it naturally goes through the venous system and through the heart and pulmonary circulation, which divide into fine arterioles and here the air will either be given off with the rest of the gases in the lung or the oxygen absorbed by the red cells. It would be rather a remarkable coincidence for the air to accumulate again into an emboli and always pick out the same area to cause a divergent strabismus.

DR. GEORGE M. COATES: I have never been able to understand why we should get an air emboli from the syringe. In giving hypodermics we must get air in and in giving serum intravenously air gets in. Why do we not have more trouble? I do not see why in injecting a septum we should get an air emboli. In Dr. Mackenzie's cases, I do not understand in his antrum puncture cases how air got into the circulation, whether it went in with hypodermic anesthesia or whether it was the needle being misplaced.

DR. G. W. MACKENZIE: The first case was one we had been studying pathologically and the case was one in which they found a clear case of a sector like loss of nutrition in the brain. It was studied postmortem. Second case, septum case, was studied by the neurological department and pronounced an air emboli. If it was not an air emboli what caused the divergent squint?

DR. EDWARD W. COLLINS: I have seen similar reactions from the topical application of a mixture of 10 per cent cocaine and adrenalin when the application is made on the cribiform plate of the ethmoid, probably causing the shrinking of all the arterioles in the area thereby producing an anemia of the nerves in this location.

DR. G. W. MACKENZIE: I have seen a good many thousands of injections. Brain should be hit sometimes in an emboli as it happens in other parts of the body. In injecting salvarsan, air is allowed to go in. The maxillary sinuses are needle punctures, not anesthesia. The others were accidents.

DR. HENRY S. WIEDER: I heartily agree with all that Dr. Collins has said. In the first place, I believe it would be impossible to demonstrate air emboli postmortem. Again, unless the air was injected directly into the blood current of an artery going directly to the brain the air would have an extremely long and difficult course through the venous circulation, right heart, pulmonary circulation, left heart, and then through the arterial circulation into the brain before it could produce an air embolus in the brain. Finally, Hare in 1889 (*The Effect of Entrance of Air into the Circulation*, *Therapeutic Gazette*, 1889, 606-610) and Whiteford (*Lancet*, May 4, 1907) have demonstrated clearly that large amounts of air can enter the venous circulation either accidentally or be injected without serious results and when the amount is excessive (according to Hare a pint or more), the death is produced principally by distention of the right heart and somewhat by the pulmonary emboli, but that the brain plays no part. Injection of air into the *carotid artery* is followed by immediate cessation of respiration, loss of consciousness and almost immediate death. This is probably cerebral in origin. It differs entirely from the picture produced following the entrance of air into the venous circulation.

DR. BENJAMIN SHUSTER: During the discussion of various accidents occurring during the procedure of puncturing the maxillary antra, several cases were reported wherein certain symptoms followed similarly in each case, namely: shock and fainting of the patient with both eyes diverging. The explanation given by Dr. Mackenzie was that it was due to an air embolus. It does not seem to me that this explains it at all. Firstly, that there is not so much danger attached to an air embolus as some people would have us believe, as shown by numerous occurrences of this accident during the administration of salvarsan or other intravenous medication. It occurs so frequently that bubbles of air pour into the vein during this procedure without any untoward effect that one could hardly resist the conviction of its harmlessness, or at least the remoteness of its danger. Secondly, it appears so far fetched for the instantaneous occurrence of the symptoms mentioned, following the entrance of a little air into a vein about the antrum and then find its way to the venous circulation and pass through the various capillaries in the lung and then to the heart before it reaches the arterial circulation and from thence to the cranial circulation to cause the symptoms named.

Yet those cases did occur and there should be a more probable explanation. It seems that there is a nearer route for air to take when puncturing an antrum and particularly when the needle pierces the opposite wall, especially at the posterior superior angle of the maxillary cavity. There air may be forced through the posterior part of the orbital cavity and find its way to the cranial cavity by means of the optic foramin or sphenoidal fissure dissecting its way along the soft tissues, and when it reaches the cavity it acts as an air tumor causing sudden intracranial pressure and compressing the various nerves about that region. Now the external rectus of the eye is supplied by a separate nerve, the sixth, while the other muscles are supplied by the third nerve, the probabilities being that the external rectus suffering less from the effect of the compression of its nerve than the other muscles from having all their nerve supply cut off and therefore the eye turns out. These symptoms disappear when the air tumor is absorbed and the pressure is released.

